Appendix A

Well Completion Report for Operable Unit 3-13, Group 4, Perched Water Well Installation

ABSTRACT

This report provides a detailed summary of the well drilling and construction activities that occurred from November 2000 through March 2001in support of Operable Unit 3-13 at the Idaho Nuclear Technology and Engineering Center. The report presents and illustrates all relevant well completion information, including construction specifications, monitoring and test equipment, geologic descriptions, drilling/sampling dates, and locations.

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ACRONYMS

BAR	bucket auger rig
bgs	below ground surface
BLR	Big Lost River
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CH	corehole
CS	central set
DOE	Department of Energy
DOE-ID	Department of Energy Idaho Operations Office
DP	deep perched
DR	dual rotary
FFA/CO	Federal Facility Agreement and Consent Order
HLLW	high-level liquid waste
HSA	hollow stem auger
HQ	core size (3.7 in.)
ICCP	Idaho Chemical Processing Plant
INEEL	Idaho National Engineering and Environmental Laboratory
INTEC	Idaho Nuclear Technologies and Engineering Center
MCP	management control procedure
NQ	core size (2.9 in.)
OU	operable unit
PP	percolation pond
PQ	core size (4.8 in.)
RI/FS	remedial investigation/feasibility study
ROD	record of decision
SP	shallow perched

SRPA	Snake River Plain Aquifer
STL	sewage treatment lagoon
TF	tank farm
TPR	technical procedure
UDR	Universal Drill Rig
WAG	waste area group

Appendix A

Well Completion Report for Operable Unit 3-13, Group 4, Perched Water Well Installation

A-1. INTRODUCTION

The Idaho National Engineering and Environmental Laboratory (INEEL) is divided into 10 waste area groups (WAGs) to better manage environmental operations mandated under a Federal Facility Agreement and Consent Order (FFA/CO) (Department of Energy Idaho Operations Office [DOE-ID] 1991). The Idaho Nuclear Technology and Engineering Center (INTEC), formerly the Idaho Chemical Processing Plant (ICPP), is designated as WAG 3. Operable Unit (OU) 3-13 encompasses the entire INTEC facility.

OU 3-13 was investigated to identify potential contaminant releases and exposure pathways to the environment from individual sites as well as the cumulative effects of related sites. Ninety-nine release sites were identified in the OU 3-13 remedial investigation/feasibility study (RI/FS) (DOE-ID 1997), of which 46 were shown to have a potential risk to human health or the environment. A new OU, OU 3-14, was created to specifically address activities at INTEC's high-level liquid waste (HLLW) tank farm area, where special actions will be required. The 46 sites were divided into seven groups based on similar media, contaminants of concern, accessibility, or geographic proximity. The OU 3-13 record of decision (ROD) (DOE-ID 1999) identifies remedial design/remedial action objectives for each of the seven groups. The seven groups are:

- Tank Farm Soils (Group 1)
- Soils Under Buildings and Structures (Group 2)
- Other Surface Soils (Group 3)
- Perched Water (Group 4)
- Snake River Plain Aquifer (Group 5)
- Buried Gas Cylinders (Group 6)
- SFE-20 Hot Waste Tank System (Group 7).

The final ROD for OU 3-13 was signed in October 1999 (DOE-ID 1999). The ROD presents the selected remedial actions for the seven groups, including Group 4 perched water instrumentation, to assess the perched water drain out and potential contaminant flux into the Snake River Plain Aquifer (SRPA). The drilling activities described in this report support the subsequent evaluation of fluid flow and contaminant flux.

For a complete description of Phase I drilling activities, see the *Field Sampling Plan for Operable Unit 3-13, Group 4 Perched Water Well Installation* (DOE-ID 2000).

A-2. SITE DESCRIPTION AND BACKGROUND

A-2.1 Site Background

The INEEL is a U.S. Government-owned facility managed by the U.S. Department of Energy (DOE). The eastern boundary of the INEEL is located 52 km (32 mi) west of Idaho Falls, Idaho. The INEEL site occupies approximately 2,305 km^2 (890 mi^2) of the northwestern portion of the eastern Snake River Plain in southeast Idaho. The INTEC facility covers an area of approximately 0.39 km^2 (0.15 mi^2) and is located approximately 72.5 km (45 mi) from Idaho Falls, in the south-central area of the INEEL (see Figure A-2-1).

INTEC has been in operation since 1952. Its original mission was to reprocess uranium from defense-related projects and to research and store spent nuclear fuel. The DOE phased out the reprocessing operations in 1992 and redirected the INTEC mission to (a) receive and temporarily store spent nuclear fuel and other radioactive wastes for future disposition, (b) manage current and past wastes, and (3) perform remedial actions.

The liquid waste generated from the past reprocessing activities is stored in an underground tank farm. The HLLW tank farm consists of eleven 1,135,624-L (300,000-gal) tanks, four 113,562-L (30,000-gal) tanks, four 68,137-L (18,000-gal) tanks, and associated equipment for the monitoring and control of waste transfers and tank parameters. One of the 1,135,624-L (300,000-gal) tanks serves as a spare tank and is always kept empty in the event of an emergency. Most of the wastes stored in the tank farm are raffinates generated during the first-, second-, and third-cycle fuel extraction processes. These wastes include high-level wastes that are composed of first-cycle raffinates and intermediate-level wastes that are composed of third-cycle raffinates blended with concentrated bottoms from the process equipment waste evaporator.

Numerous Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites are located in the tank farm area and adjacent to the process equipment waste evaporator. Contaminants found in the interstitial soils of the tank farm are the result of accidental releases and leaks from process piping, valve boxes, and sumps and are also the result of cross-contamination from operations and maintenance excavations. No evidence has been found to indicate that the waste tanks themselves have leaked. The contaminated soils at the tank farm compose about 95% of the known contaminant inventory at INTEC. The final comprehensive RI/FS for OU 3-13 (DOE-ID 1997) contains a complete discussion of the nature and extent of contamination.

The formation of the perched water at INTEC is a result of natural flows from the Big Lost River (BLR) on the northern portion of the site and operations of the percolation ponds on the southern portion. The percolation ponds have come on line in a staggered manner. The pond directly south of INTEC (Pond 1) began receiving service waste in 1984. The southeastern pond (Pond 2) came on line in 1986. The ponds have received all plant service wastewater since use of the injection well was discontinued in 1984. The ponds are filled on an annual alternating schedule. The two ponds received Resource Conservation and Recovery Act clean-closure equivalency for metals contamination in 1994 and 1995. This means that only the remaining radionuclides need to be addressed under CERCLA.

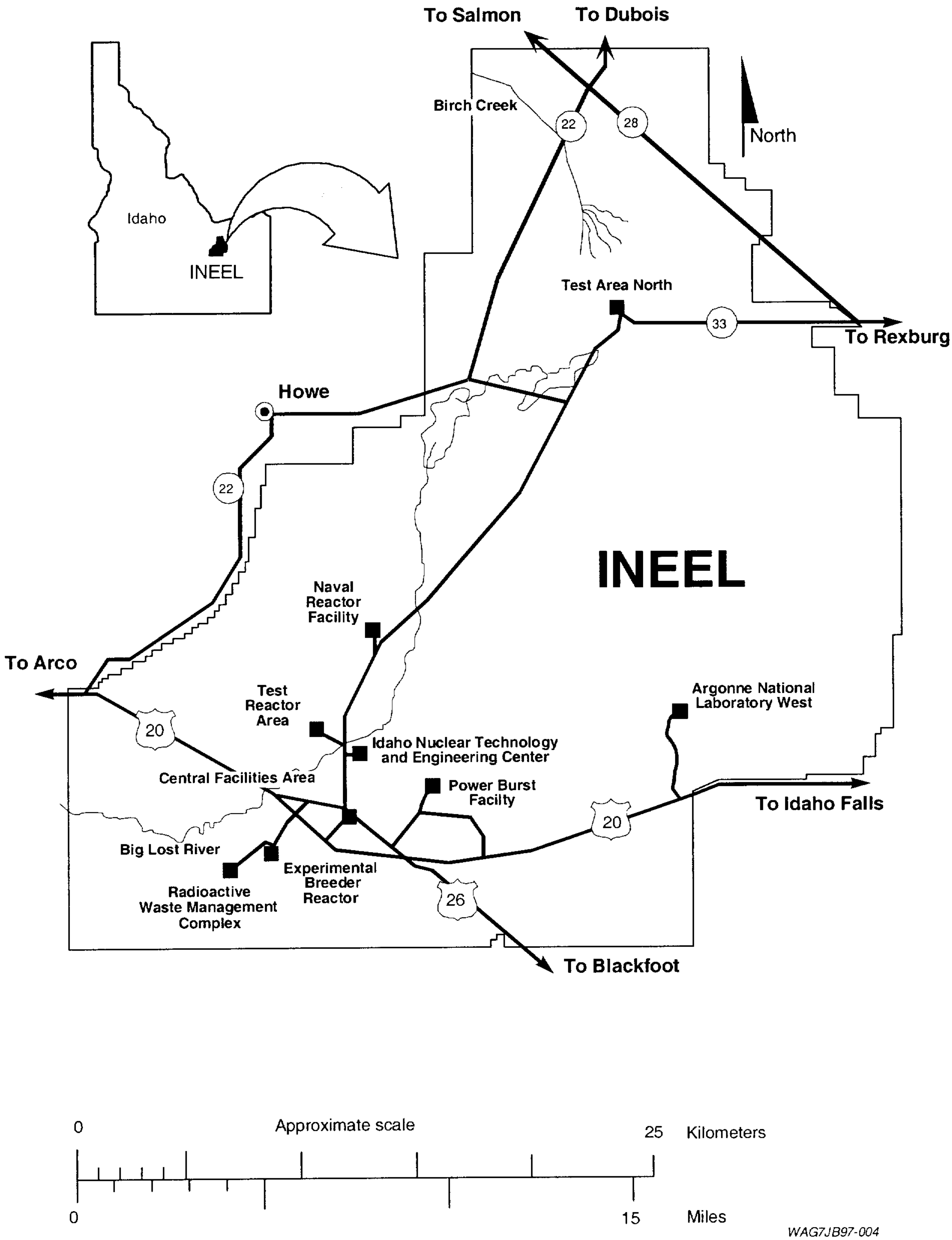

Figure A-2-1. Map showing the location of INTEC at the INEEL.

A-2.2 Geological Setting

The geology of the site includes about 13.7 m (45 ft) of surficial alluvium deposited primarily during the Pinedale Glaciation approximately 12,000 to 35,000 years ago. The BLR is an intermittent stream, and flow is lost by infiltration through the riverbed. Underneath the alluvium are several thousand feet of relatively thin fractured basalt flows. Interspersed between some of the basalt flows are sedimentary interbeds ranging in thickness from a few inches to many feet. Some of the interbeds are localized, while others are laterally continuous. The SRPA is located at about 137 m (450 ft) below ground surface (bgs) at the INTEC site.

A-2.3 Hydrologic Setting

Several sources of water contribute to moisture movement and the development of perched water underneath INTEC. The two major recharge sources are the percolation ponds (bottom center, Figure A-2-2) and the BLR (upper left, Figure A-2-2). An average of 4.39 million L (1.16 million gal) of wastewater is discharged to the percolation ponds each day. Depending on the snowpack and precipitation that occurs in a particular year, the BLR may flow all year or cease to flow entirely for several months or years. The mean annual flow in the BLR at a point near the INTEC site is 42,467,544 m^3/month (34,429 acre-ft/month). Together, these two sources are thought to supply about 90% of the recharge. The wastewater treatment lagoons (upper right, Figure A-2-2), operational activities, and precipitation account for the remaining recharge. Average annual discharge to the wastewater treatment lagoons is 52,617 m^3/yr (13.9 million gal/yr). Operational losses of plant water are variable and not well quantified. The mean annual precipitation at the INEEL is approximately 21.5 cm/yr (8.5 in./yr). Usually, less than half of this occurs as snowfall. The collection of precipitation in local basins can supply substantial amounts of focused infiltration.

As the wetting front moves downward through the surficial sediments, it may move through contaminated sediments, where the contaminants may be mobilized and transported. The water continues its downward movement until it encounters an underlying fractured basalt flow, where the water is likely to collect and move laterally along the sediment/basalt interface until it encounters preferential pathways that may be associated with a fracture network or permeable rubble zones between basalt flows. In the basalt, most of the water is believed to flow as a saturated front through high-permeability systems consisting of fractures and permeable interflow zones. This results in rapid water movement through the entire fractured basalt portion of the subsurface.

If the infiltrating water encounters sedimentary interbeds, the water may spread laterally, moving downgradient. A permeability contrast between the interbed, the fractures, and basalt matrix causes the water to pond and spread. One result of this contrast is the development of perched water in association with the interbeds. The perching may occur either on the interbeds or dense basalt. However, most of the perched water at INTEC appears to be associated with the interbeds.

The extent to which water moves horizontally while vertically transiting the fractured basalts is uncertain. Water has been shown to move laterally several miles in the subsurface when sufficient water was available to support long lateral spread (Nimmo et al. 2001). Eventually, water infiltrating at the surface of INTEC will reach the underlying SRPA.

A-3. WELL DRILLING AND INSTALLATION

A total of 21 wells were drilled between November 16, 2000, and March 30, 2001. Table A-3-1 is a construction summary of these wells. Well construction graphics are provided in Attachment A-1. All well drilling and completion activities were conducted in accordance with applicable regulations; a list of associated documents, procedures, and guides is provided in Attachment A-2.

The following well drilling activities are summarized from the project drilling, sampling, and Field team leader logs. Detailed accounts of daily drilling activities can be found in the drilling logbook(s) for a specific well or in the Field team leader logbook corresponding to the well and dates in question. Locations of each well set are illustrated in Figure A-2-2.

A-3.1 ICPP-SCI-P-216 Well Drilling and Completion Summary (BLR-Alluvial)

Drilling of well ICPP-SCI-P-216 (BLR-Alluvial) began on January 2, 2001. Using a bucket auger rig (BAR) equipped with a 20-in. auger, a borehole was drilled to 5.8 m (19 ft), and a 10-in. carbon-steel surface casing was set on January 4, 2001. On January 9, 2001, the T-4 rig, equipped with a 6-in. hollow stem auger (HSA), set up over the borehole and augered to the alluvium-basalt contact at 10.8 m (35.5 ft) bgs. Drilling continued past the "soft" contact of rubble to 11.3 m (37 ft) bgs.

Upon completion of drilling, the installation of instruments began on January 9, 2001. A piezometer was installed at 10.9 m (35.9 ft) bgs and screened from 10.8 to 10.9 m (35.4 to 35.9 ft). A sand pack composed of 8 × 12 Colorado silica sand was installed around the screen from 10.3 to 11.3 m (33.9 to 37 ft) bgs. A 15.2-cm (6-in.) layer of bentonite was placed above the sand pack to create a seal. An instrument package consisting of a tensiometer and a lysimeter was installed at 10 m (32.87 ft) and 9.8 m (32.3 ft) bgs, respectively. This instrument package was packed with a silica flour slurry from 9.4 to 10.1 m (31 to 33.3 ft) bgs, and the hole was completed to the surface using bentonite. The surface casing was grouted into place using cement on January 9, 2001. The well was completed as described in Table A-3-1 and as shown in Attachment A-1.

During the drilling of the BLR-Alluvial hole, difficulties arose from the collapse of the borehole wall. This problem was addressed by pouring 190 L (50 gal) of water into the borehole and allowing it to sit overnight. The addition of water successfully prevented any further collapse, allowing the drilling to continue and the surface casing to be set.

A-3.2 ICPP-SCI-P-217 Well Drilling and Completion Summary (BLR-SP)

On January 9, 2001, the BAR, equipped with an 18-in. bucket, began drilling well ICPP-SCI-P-217 (BLR-Shallow Perched [SP]). The BAR drilled 0.6 to 0.9 m (2 to 3 ft) with the 18-in. bucket to provide a starter hole for the 24-in. bucket. The starter hole was necessary due to the relative hardness of the frozen ground. Using the 24-in. bucket, a depth of 10.2 m (33.5 ft) bgs was reached on January 12, 2001. On January 15, 2001, a 16-in. carbon-steel surface casing was set to 10.2 m (33.5 ft) bgs. During the drilling of the 24-in. borehole, difficulties again arose from the collapse of the borehole. The addition of water was attempted unsuccessfully. A polymer was then added to the borehole and prevented the collapse of the borehole walls.

Table A-3-1. Well construction summary.

Well Name	Alias	Hole Diameter and Interval (ft)	Bit Type	Cored Interval (ft)	Cored Size	Casing Size and Interval (ft)	Instrument Type/Placement or Screened Interval (ft)	Packing Material/Interval	Northing[a] Brass Cap (ft)	Easting Brass Cap (ft)	Elevation (ft)	Measure Point Elevation (ft)
ICPP-SCI-P-216	BLR-Alluvial	20 in. (0-19.5) 6 in. (19.5-37)	Bucket auger HAS	N/A	N/A	10 in. (0-19.5)	Lysimeter (32.3) Tensiometer (32.87) 1.25-in. PVC piezometer (35.4-35.9)	Silica flour (31-33.3) Silica flour (31-33.3) 8x12 silica sand (33.9-37)	696438.07	296190.33	4913.64	4916.11
ICPP-SCI-P-217	BLR-SP	24 in. (0-33.5) 12 in.(33.5-180.5)	Bucket auger Hammer	N/A	N/A	16 in. (0-33.5) 8 in. (10-130)	Tensiometer (132.5) 1-in. PVC piezometer (140-145.5) Soil moisture sensor (163.5) Tensiometer/lysimeter (166.75)	8x12 silica sand (131.1-134.5) 8x12 silica sand (138-148) Silica flour/8x12 silica sand (158-167) Silica flour/8x12 silica sand (158-167)	696437.99	296189.36	4916.11	4916.18
ICPP-SCI-P-218	BLR-DP	24 in. (0-31.5) 19 in. (31.5-180) 10 5/8 in. (180-400)	Bucket auger Hammer Hammer	N/A	N/A	20 in. (0-30) 12 in. (0-174.5)	Tensiometer/lysimeter (352) Temperature sensor (354) 4-in. SS monitoring well (375-385) Tensiometer (395)	Silica flour/8x12 silica sand (349-355) Silica flour/8x12 silica sand (349-355) 8x12 silica sand (371-386) Silica flour/8x12 silica sand (386-395.5)	696473.04	296188.99	4913.48	4915.82
ICPP-SCI-P-248	BLR-CH	16 in. (0-36.5) 4.8 in. (36.5-172.6) 3.7 in. (172.6-414.7)	HSA PQ core HQ core	N/A 36.5-172.6 172.6-414.7	N/A PQ HQ	12 in. (0-36.5)	2-in. SS monitoring well (120-130ft)	8x12 sand (117-132)	696472.53	296150.93	4913.52	4916.06
ICPP-SCI-P-219	STL-Alluvial	20 in. (0-19.5) 6 in. (19.5-31.5)	Bucket auger HSA	N/A N/A	N/A N/A	10 in. (0-19.5)	Lysimeter (26) Tensiometer (26.5) 1.25-in. PVC piezometer (30.4-30.9)	Silica flour (22-26.5) Silica flour (22-26.5) 8x12 silica sand (28-31.5)	696379.65	297749.42	4911.63	4911.63
ICPP-SCI-P-220	STL-SP	24 in. (0-34.5) 15 in. (34.5-170)	Bucket auger Hammer	N/A N/A	N/A N/A	16 in. (0-34.5)	Lysimeter (103.25) Tensiometer (103.5) Tensiometer (146) Tensiometer (154)	Silica flour/8x12 sand mix (99.7-104.25) Silica flour/8x12 sand mix (138.5-159.5)	696412.87	297780.87	4909.44	4911.75
ICPP-SCI-P-221	STL-DP	24 in. (0-30) 19 in. (30-185) 10 5/8 in. (185-440)	Bucket auger Hammer Hammer	N/A N/A N/A	N/A N/A N/A	20 in. (0-30) 12 in. (0-167)	Tensiometer (384.5) Tensiometer/lysimeter (415) 4-in. SS monitoring well (429-439)	Silica flour/8x12 sand mix (379-386) Silica flour/8x12 sand mix (414-418.5) 8x12 silica sand (424-440)	696412.21	297751.87	4909.43	4912.10
ICPP-SCI-P-251	STL-CH	10 in. (0-31) 4.8 in. (31-151) 3.7 in. (151-451)	HAS PQ core HQ core	N/A 31-151 151-451	N/A PQ HQ	6 in. (0-30)	1-in. PVC piezometer (99-109) 2-in. SS monitoring well (140-145)	8x12 silica sand (93-111.5) 8x12 silica sand (135-148.5)	696379.42	29779.44	4912.27	4912.27
ICPP-SCI-P-222	PP-Alluvial	18 in. (0-33)	Bucket auger	N/A	N/A	10 in. (0-25)	Lysimeter (26.6) Tensiometer (27.4) 1.25-in. PVC piezometer (30.8-31.3)	Silica flour (26-27.6) Silica flour (26-27.6) 8x12 silica sand (28.5-31.8)	692535.30	296832.77	4916.76	4919.37
ICPP-SCI-P-223	PP-SP	24 in. (0-26) 10 5/5 in. (26-193)	Bucket auger Hammer	N/A N/A	N/A N/A	12 in. (0-26)	Tensiometer/lysimeter (108.8) Tensiometer (131.5) Tensiometer/lysimeter (169) 1-in. PVC piezometer (180-182)	Silica flour/8x12 silica sand (106.9-109.7) Silica flour (120-132) Silica flour (168.9-170) 8x12 silica sand (177-187)	692536.87	296990.14	4917.04	4919.79
ICPP-SCI-P-224	PP-DP	24 in. (0-26.1) 19 in. (26.1-205) 11 7/8 in. (205-398)	Bucket auger Hammer Hammer	N/A N/A N/A	N/A N/A N/A	20 in. (0-26.1) 12 in. (0-191)	1-in. PVC piezometer (50-55)[b] Tensiometer (263.5) 4-in. SS monitoring well (372-382) Tensiometer/lysimeter (383)	8x12 silica sand (47-62) Silica flour/8x12 silica sand (254-264.5) 8x12 silica sand (359-379) Sloughed native material (379-398)	692538.54	296958.74	4917.06	4918.72

Table A-3-1. (continued).

Well Name	Alias	Hole Diameter and Interval (ft)	Bit Type	Cored Interval (ft)	Cored Size	Casing Size and Interval (ft)	Instrument Type/Placement or Screened Interval (ft)	Packing Material/Interval	Northing[a] Brass Cap (ft)	Easting Brass Cap (ft)	Elevation (ft)	Measure Point Elevation (ft)
ICPP-SCI-P-250	PP-CH	10 in. (0-18.5) 4.8 in. (18.5-178.4) 3.7 in. (178.4-280) 2.9 in. (280-414.8)	HAS PQ core HQ core NQ core	N/A 18.5-178.4 178.4-280 280-414.8	N/A PQ HQ NQ	6 in. (0-18.5)	1-in. PVC piezometer (187-192) 2-in. SS monitoring well (235-255)	8x12 silica sand (185-195) 8x12 silica sand (230-258)	692537.32	297025.79	4916.59	4919.06
ICPP-SCI-P-247	CS-Alluvial	12 in. (0-46.5)	HSA	N/A	N/A	8 in. (0-35)	Lysimeter (40.9) Tensiometer (41.5) 1.25-in. PVC piezometer (45.5-46)	Silica flour (38.5-42) Silica flour (38.5-42) 8x12 silica sand (42.2-46.5)	694353.62	296940.52	4914.48	4916.93
ICPP-SCI-P-225	CS-SP	12 in. (0-61) 7 5/8 in. (61-167)	HSA Hammer	N/A N/A	N/A N/A	8 in. (0-61)	Tensiometer/lysimeter (122) Tensiometer/lysimeter (155) 1-in. PVC piezometer (159-164)	Silica flour/8x12 sand mix (121-123) Silica flour/8x12 sand mix (154-156) 8x12 silica sand (158-165)	694337.63	296919.28	4914.46	4916.89
ICPP-SCI-P-226	CS-DP	24 in. (0-58) 19 in. (58-200) 11 in. (200-405)	Bucket auger Hammer Hammer	N/A N/A N/A	N/A N/A N/A	20 in. (0-58) 12 in. (0-198)	Tensiometer/lysimeter (280) Tensiometer (287) 1.25-in. PVC piezometer (288.5-293) 4-in. SS monitoring well (368-378) Tensiometer (383)	Silica flour/8x12 sand mix (274.5-280.5) Silica flour (285-287.5) 8x12 silica sand (288.4-294) Silica flour (382-390)	694385.14	296942.09	4914.54	4916.8
ICPP-SCI-P-249	CS-CH	12 in. (0-60) 3.7 in. (60-250) 2.9 in. (250-402)	HAS HQ core NQ core	N/A 60-250 250-402	N/A HQ NQ	6 in. (0-60)	2-in. SS monitoring well (188-198)	8x12 silica sand (184.5-198)	694325.31	296938.79	4914.48	4917.0
ICPP-SCI-P-227	TF-Alluvial	20 in. (0-19.5) 6 in. (19.5-39)	Bucket auger HSA	N/A N/A	N/A N/A	10 in. (0-19.5)	Tensiometer/lysimeter (35) 1.25-in. PVC piezometer (37.5-38)	Silica flour (32-35) 8x12 silica sand (36-39)	696122.36	296898.63	4912.43	4914.89
ICPP-SCI-P-228	TF-SP	20 in. (0-39.5) 10 5/8 in. (39.5-202)	Bucket auger Hammer	N/A N/A	N/A N/A	16 in. (0-39.5)	Tensiometer/lysimeter (118) 1-in. PVC piezometer (145-150) Tensiometer/lysimeter/temperature sensor (157) Tensiometer (173)	8x12 silica sand (117.5-118) 8x12 silica sand (135-150) Silica flour/8x12 silica sand (156-158) Silica flour/8x12 silica sand (171-174)	696123.30	296951.23	4912.22	4914.8
ICPP-SCI-P-229	TF-DP	24 in. (0-41) 19 in. (41-203) 11 in. (203-298)	Bucket auger Hammer Hammer	N/A N/A N/A	N/A N/A N/A	20 in. (0-41) 12 in. (0-203)	Tensiometer/soil moisture sensor (350.5) 4-in. SS monitoring well (375-385) Tensiometer/lysimeter/temperature sensor (389)	Silica flour/8x12 silica sand (350-351.6) 8x12 silica sand (365-387.5) Silica flour/8x12 silica sand (388-390)	696121.27	296871.53	4912.43	4914.61
ICPP-MON-A-230	TF-Aquifer	24 in. (0-42.5) 19 in. (42.5-219) 15 in. (219-523)	Bucket auger Hammer Hammer	N/A N/A 316.7-395[c]	N/A N/A PQ[c]	20 in. (0-42.5) 16 in. (43-203)	6-in. SS monitoring well (443-483)	8x12 silica sand (420-493)	696122.59	296977.19	4912.41	4914.81
ICPP-SCI-P-252	TF-CH	20 in. (0-38) 4.8 in. (38-161.2) 3.7 in. (161.2-325)	Bucket auger PQ core HQ core	N/A 38-161.2 161.2-325	N/A PQ HQ	6 in. (0-42.5)	2-in. SS monitoring well (145-150)	8x12 silica sand (140-152)	696123.08	2969.25.41	4912.36	4914.97

a. Northings, eastings, and vertical elevations were measured to National Geodetic Vertical Datum of 1929 and North American Datum of 1927.

b. This piezometer was constructed between the borehole wall/20-in. casing and the 12-in. casing

c. The cored interval of the TF-Aquifer well was overreamed with the 15-in. bit to enable completion of the well. The interval was cored to complete the coring requirements that were not met when the TF corehole had to be terminated at 325 ft due to drilling problems.

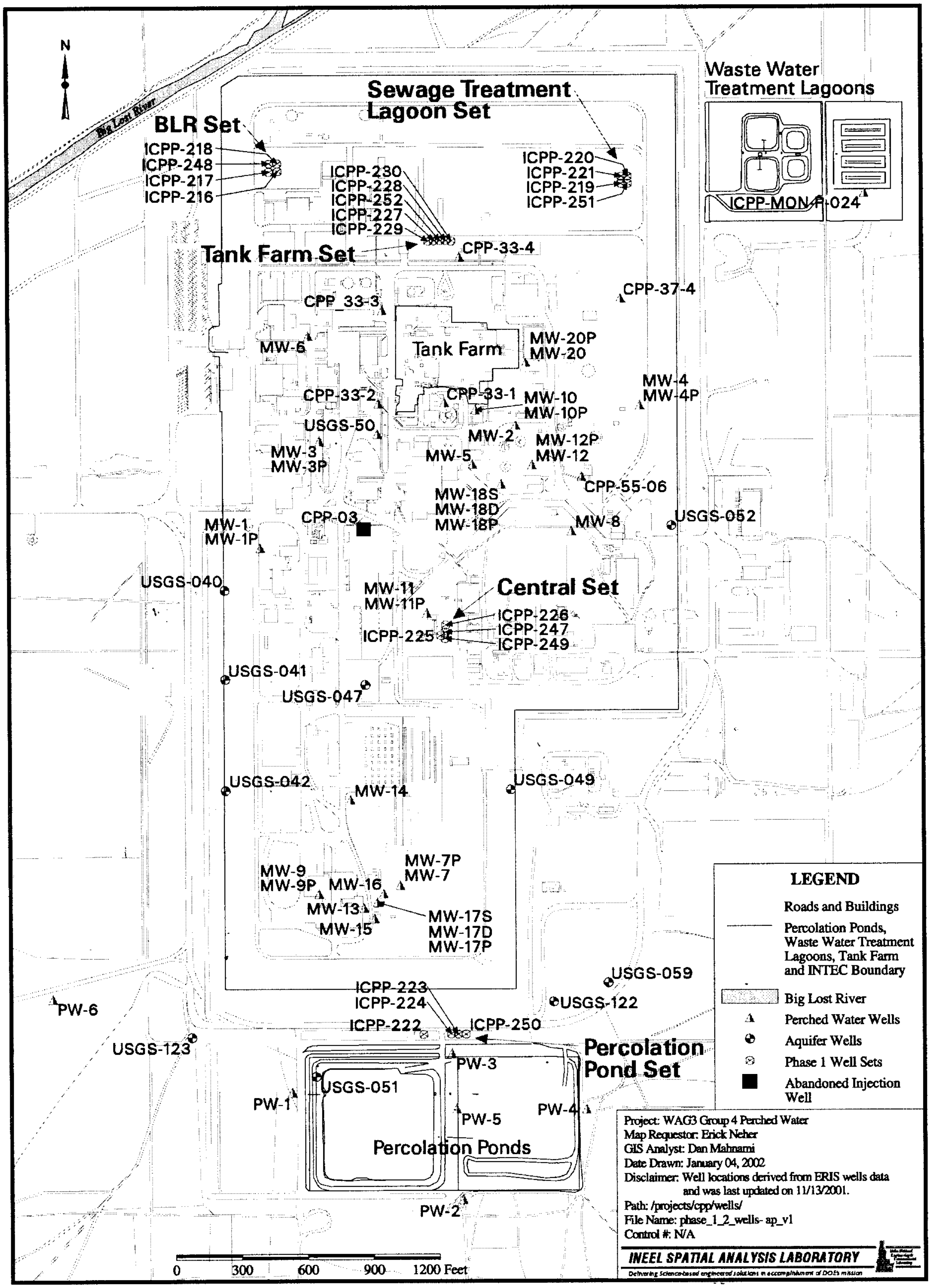

Figure A-2-2. Map of INTEC showing new and existing wells.

Drilling of the BLR-SP continued on February 7, 2001. The T-4 rig began air rotary drilling using a 12-in. bit. A total depth of 53.6 m (176 ft) bgs was reached on February 9, 2001. When the borehole was tagged on February 12, the bottom of the borehole was 47.5 m (156 ft) bgs. The borehole was then cleaned, and a "rat tail" was drilled to 55 m (180.5 ft) bgs. Two more attempts at cleaning the hole were made, but both were unsuccessful. The decision was made to move the T-4 to another hole and return at a later date.

On March 5, 2001, a temporary 8-in. casing was installed to a depth of 39.6 m (130 ft). The borehole was cleaned twice using a 7 5/8-in. bit, and the maximum depth after cleaning was 51.2 m (168 ft) bgs. The final depth was considered feasible for the project. The well was built as described in Table A-3-1 and as shown in the well completion figure in Attachment A-1. The temporary 8-in. casing could not be removed due to the interbed material pinching in on the casing. During an attempted removal, a bolt in the bail broke due to stress created during removal attempts. It was decided to unthread the casing, remove as much as possible, and abandon the rest. The upper 3 m (10 ft) of the 8-in. casing was removed, leaving 8-in. casing from 3 to 39.6 m (10 to 130 ft) bgs. The well was completed on March 6, 2001.

A-3.3 ICPP-SCI-P-218 Well Drilling and Completion Summary (BLR-DP)

Drilling began on ICPP-SCI-P-218 (BLR-Deep Perched [DP]) on January 5, 2001. Drilling was first attempted using the BAR with a 24-in. bucket but was unsuccessful. The bucket was downsized to 18 in., and drilling was successfully initiated. After drilling through the frozen soil to a depth of approximately 0.9 m (3 ft) bgs, the 24-in. bucket was reinstalled on the BAR. On January 9, 2001, the 24-in. borehole was completed to 9.6 m (31.5 ft) bgs. A 20-in. carbon-steel surface casing was then set to 9.1 m (30 ft) bgs. Caving of borehole wall material prevented setting the casing to bedrock.

Drilling resumed on March 14, 2001. On March 16, 2001, the dual rotary (DR) rig, equipped with a hammer and 15-in. air rotary bit, drilled to 54.7 m (179.6 ft) bgs. An attempt was made to set 12-in. casing to 54.7 m (179.6 ft) bgs; however, the borehole was too tight to accommodate the casing. The decision was made to over-ream the borehole with a 19-in. bit. On March 20, 2001, the 12-in. casing was removed, and the 19-in. bit began over-reaming. On March 21, 2001, over-reaming was completed to a depth of 54.9 m (180 ft) bgs, and casing was set to 53.2 m (174.6 ft) bgs.

Drilling recommenced on March 22, 2001, using a 10 5/8-in. bit. On March 26, 2001, the BLR-DP was drilled to a total depth of 122 m (400 ft) bgs. On March 27, 2001, the well was completed in the borehole as described in Table A-3-1 and as shown in the well completion diagram in Attachment A-1.

A-3.4 ICPP-SCI-P-248 Well Drilling and Completion Summary (BLR-CH)

Well drilling for ICPP-SCI-P-248 (BLR-Corehole [CH]) commenced on November 22, 2000. The DR rig began drilling with a 16-in. HSA and on November 27, 2000, reached a depth of 10.7 m (35 ft) bgs. The alluvium-basalt contact was located at 9.75 m (32 ft) bgs. A 6-in. carbon-steel surface casing was set to 10.7 m (35 ft) bgs on November 27, 2000.

Coring commenced on December 5, 2000. On December 13, 2000, the UDR-1000, using PQ (4.8-in.) core rods, reached a depth of 52.6 m (172.6 ft) bgs. The coring equipment was downsized to HQ (3.7 in.), and coring operations continued on December 14, 2000. On January 2, 2001, a depth of 117.3 m (385 ft) bgs was reached. Due to cuttings being blocked, the core equipment was downsized to NQ

(2.9 in.). On January 3, 2001, a total depth of 126.4 m (414.7 ft) bgs was reached utilizing the NQ core rods.

The well was completed on January 25, 2001, as described in Table A-3-1 and as shown in Attachment A-1. The downtime between drilling completion and well installation is the result of difficulties in removing the NQ and HQ core rods from the corehole. The abundance of moisture, causing difficulties in adding bentoniting to the corehole at the desired completion level, also contributed to the delay.

A-3.5 ICPP-SCI-P-219 Well Drilling and Completion Summary (STL-Alluvial)

On December 15, 2000, drilling began on ICPP-SCI-P-219 (Sewage Treatment Lagoon [STL]-CH). On December 18, 2000, the BAR, equipped with a 20-in. bucket, completed drilling to a depth of 5.9 m (19.5 ft) bgs. On December 22, 2000, 10-in. carbon-steel surface casing was set to a depth of 5.9 m (19.5 ft) bgs.

The T-4 rig, equipped with a 6-in. HAS, was set up at the STL-Alluvial well on December 22, 2000. On January 2, 2001, the T-4 began drilling, a total depth of 9.75 m (32 ft) bgs was reached, and the well was completed as described in Table A-3-1 and shown in the well completion diagram in Attachment A-1.

A-3.6 ICPP-SCI-P-220 Well Drilling and Completion Summary (STL-SP)

Drilling began at ICPP-SCI-P-220 on December 18, 2000, with the BAR equipped with a 24-in. bucket. On December 21, 2000, the 24-in. borehole reached a depth of 10.5 m (34.5 ft) bgs. On December 22, 2000, 16-in. carbon-steel casing was set to a depth of 10.5 m (34.5 ft) bgs.

Drilling continued on March 28, 2001, when the DR rig, equipped with a 15-in. air rotary bit and hammer, reached a total depth of 51.8 m (170 ft) bgs.

The well was completed on March 29, 2001, as described in Table A-3-1 and as shown in Attachment A-1.

A-3.7 ICPP-SCI-P-221 Well Drilling and Completion Summary (STL-DP)

Drilling of ICPP-SCI-P-221 (STL-DP) commenced on January 12, 2001. The BAR, equipped with a 24-in. bucket, drilled to a depth of 9.1 m (30 ft) bgs. During drilling, the borehole collapsed. Water was added to the hole, and the BAR was demobilized to continue work at other sites while the water settled. Drilling continued on January 28, 2001, when a total depth of 9.4 m (31 ft) bgs was reached. On January 30, 2001, 20-in. carbon-steel casing was set to a depth of 9.4 m (31 ft) bgs.

Drilling resumed on March 22, 2001. The T-4 rig, equipped with a 15-in. air rotary bit and hammer drilled to 56.4 m (185 ft) bgs. An attempt was made to install 12-in. carbon-steel surface casing. The casing could only be installed to 35 m (115 ft) bgs. The decision was made to over-ream the borehole with a 19-in. bit. After over-reaming the borehole on March 23, 2001, 12-in. carbon-steel surface casing was set to 51 m (167 ft) bgs. The installation of the casing was completed on March 27, 2001. During casing installation, equipment failure (bolt on bail broke) caused the first 12.2 m (40 ft) of casing to be dropped. The casing fell to 51 m (167 ft) bgs. An attempt was made to retrieve the casing, but the attempt failed. The remaining casing was set on top of the 12.2 m (40 ft) of casing, and the annulus was sealed with bentonite. Drilling resumed on March 27, 2001, with a 10 5/8-in. drill bit. On March 29, 2001, drilling was completed to a depth of 134 m (440 ft) bgs. The well was constructed as described in Table A-3-1 and as shown in Attachment A-1.

A-3.8 ICPP-SCI-P-251 Well Drilling and Completion Summary (STL-CH)

Drilling at well ICPP-SCI-P-251 began on November 27, 2000. On November 28, 2000, the DR rig, using a 14-in. HSA, reached a depth of 9.4 m (31 ft) bgs. A 6-in. carbon-steel surface casing was set to a depth of 9.4 m (31 ft) bgs and grouted in place. Drilling resumed on January 10, 2001. On January 19, 2001, the Universal Drill Rig (UDR), beginning with PQ core rods, drilled to a depth of 47.5 m (156.5 ft) bgs. A temporary PQ casing was set to 47.4 m (155.5 ft) bgs. Drilling resumed on January 23, 2001, with an LF-70 coring rig using HQ core rods. Using the HQ core rods, a total depth of 137.5 m (451 ft) bgs was reached on January 29, 2001. Removal of the HQ rods proved difficult due to the amount of sediments and cuttings between the HQ and PQ rods. Removal of the rods by the LF-70 was abandoned, and the decision was made to remove the rods when one of the UDRs or T-4 rig became available. On February 16, 2001, the T-4 rig cut the HQ rods and pulled the rods. PQ rods were also stuck, and the T-4 rig was unable to retrieve them. The decision was made to wait for the Schramm rig to pull the PQ rods. The Schramm completed pulling the PQ rods on February 21, 2001. A 6.1-m (20-ft) section of PQ rods could not be removed and was abandoned. The rod is in place at 4.6 to 10.7 m (15 to 35 ft) bgs. On February 21, 2001, the well was completed, as described in Table A-3-1 and as shown in Attachment A-1.

A-3.9 ICPP-SCI-P-222 Well Drilling and Completion Summary (PP-Alluvial)

On December 15, 2000, a BAR equipped with an 18-in. bucket began drilling ICPP-SCI-P-222 (Percolation Pond [PP]-Alluvial). A depth of 5.9 m (19.5 ft) bgs was reached on December 18, 2000. A 10-in. carbon-steel surface casing was set to 5.9 m (19.5 ft) bgs on December 21, 2000. The T-4 rig, equipped with a 14-in. HSA, drilled to a total depth of 10 m (33 ft) bgs. On December 10, 2000, the well was completed, as described in Table A-3-1 and as shown in Attachment A-1.

A-3.10 ICPP-SCI-P-223 Well Drilling and Completion Summary (PP-SP)

Drilling of ICPP-SCI-P-223 began on December 13, 2000, using a BAR equipped with a 24-in. bucket. A total depth of 7.6 m (25 ft) bgs was reached on December 13, 2000. A 12-in. carbon-steel surface casing was set to 7.6 m (25 ft) bgs on December 21, 2000. Drilling resumed on February 16, 2001, when the T-4 rig, equipped with a 10 5/8-in. bit, drilled to a total depth of 58.8 m (193 ft) bgs. Due to bridging of interbeds, the borehole was temporarily cased to 45.7 m (150 ft) bgs with an 8-in. carbon-steel casing. The casing and borehole were then cleaned using a 7 5/8-in. bit. Well construction began on February 22, 2001, and was competed on February 24, 2001. Well construction was delayed by heavy snowfall, causing a temporary shutdown and bridging of sloughed interbed material. The well was constructed as shown in Attachment A-1 and as described in Table A-3-1.

A-3.11 ICPP-SCI-P-224 Well Drilling and Completion Summary (PP-DP)

Drilling of well ICPP-SCI-P-224 commenced on December 13, 2000, using a BAR equipped with a 24-in. bucket. A total depth of 7.9 m (26 ft) bgs was reached on December 13, 2000. On December 21, 2000, a 20-in. carbon-steel casing was set to a depth of 7.9 m (26 ft) bgs. Drilling resumed on March 7, 2001. On March 9, 2001, the T-4 rig, equipped with a 19-in. bit, reached a total depth of 62.5 m (205 ft) bgs. An attempt was made to install a 16-in. carbon-steel surface casing, but that attempt failed due to the nature of the hole. On March 13, 2001, a 12-in. carbon-steel surface casing was installed (in place of the 16-in. casing) to 58.4 m (191.5 ft) bgs.

Drilling resumed on March 13, 2001, with the T-4 rig equipped with an 11 7/8-in. bit. A total depth of 121.3 m (398 ft) bgs was reached on March 14, 2001. The well was completed on March 15, 2001, as shown in Attachment A-1 and as described in Table A-3-1.

A-3.12 ICPP-SCI-P-250 Well Drilling and Completion Summary (PP-CH)

On December 14, 2000, the BAR, equipped with an 18-in. bucket, began drilling ICPP-SCI-P-250 and reached a depth of 5.6 m (18.5 ft) bgs. On December 21, 2000, a 6-in. carbon-steel surface casing was set to 5.6 m (18.5 ft) bgs.

Coring commenced on January 23, 2001. On January 30, 2001, the UDR, using PQ core rods, reached a depth of 54.4 m (178.4 ft) bgs. During this phase of the drilling, water accumulated in the borehole during a break in drilling. When drilling resumed, a small amount of water was pulled into the dust-suppression system. The water was discharged into the drums, and a small amount was blown out around the filter and the drums. All cuttings were routed to a poly tank after this occurrence.

Coring resumed on February 1, 2001. The LF-70 core rig commenced coring from 54.4 m (178.4 ft) bgs. On February 5, 2001, a depth of 85.3 m (280 ft) bgs was reached. The LF-70 was reequipped with NQ core rods to downsize. On February 8, 2001, a total depth of 126.4 m (414.8 ft) bgs was reached. The HQ and NQ core rods were stuck upon completion of drilling, and the LF-70 was not powerful enough to remove them. The rods remained in place until one of the larger rigs could be mobilized to the site to remove them.

On February 26, 2001, the UDR began removing the core rods. The NQ and HQ were removed on March 2, 2001. Well construction began on March 3, 2001. The UDR was mobilized offsite on March 3, 2001, and well construction was halted due to a lack of materials. On March 6, 2001, the T-4 was mobilized to the site to remove the PQ core rods and aid in well construction. Well construction and removal of the PQ rods was accomplished on March 7, 2001. The well was constructed as shown in Attachment A-1 and as described in Table A-3-1.

A-3.13 ICPP-SCI-P-247 Well Drilling and Completion Summary (CS-Alluvial)

The DR rig, equipped with a 12-in. HSA, commenced drilling well ICPP-SCI-P-247 (Central Set [CS]-Alluvial) on December 7, 2000. On December 8, 2001, a total depth of 10.7 m (35 ft) bgs was reached. The T-4 rig was mobilized onsite on December 19, 2000, and drilled to a total depth of 14.2 m (46.5 ft) bgs. The installation of instruments was completed on December 19, 2000. On December 21, 2000, an 8-in. carbon-steel surface casing was set to a depth of 10.7 m (35 ft) bgs. The well was constructed as shown in Attachment A-1 and as described in Table A-3-1.

A-3.14 ICPP-SCI-P-225 Well Drilling and Completion Summary (CS-SP)

Drilling of ICPP-SCI-P-225 commenced on December 5, 2000. On December 6, 2000, the DR rig, equipped with a 12-in. HAS, reached a depth of 18.6 m (61 ft) bgs. An 8-in. carbon-steel surface casing was installed to a depth of 18.3 m (60 ft) bgs. Drilling recommenced on February 13, 2001. The T-4 rig, equipped with a 7 7/8-in. bit, drilled to a depth of 32.9 m (108 ft) bgs. The bit was lost downhole due to a broken joint. Drilling was delayed while waiting for equipment to retrieve the bit. During the delay, the T-4 rig was mobilized to work at another drill site. On February 26, 2001, the T-4 was mobilized back to the CS-SP, and the drill bit and joint fragments were retrieved. On February 27, 2001, drilling resumed, and a total depth of 50.9 m (167 ft) bgs was achieved.

The well was completed on February 28, 2001, as shown in Attachment A-1 and as described in Table A-3-1.

A-3.15 ICPP-SCI-P-226 Well Drilling and Completion Summary (CS-DP)

The BAR, equipped with a 24-in. bucket, commenced drilling of ICPP-SCI-P-226 on December 22, 2001. On January 2, 2001, a depth of 17.7 m (58 ft) bgs was reached. On January 5, 2001, a 20-in. carbon-steel surface casing was installed to a depth of 17.7 m (58 ft) bgs. Drilling continued on March 16, 2001. On March 20, 2001, the T-4 rig, equipped with a 19-in. bit, drilled to a depth of 61 m (200 ft) bgs, and a 12-in. carbon-steel casing was set to a depth of 60.6 m (198.8 ft) bgs. Drilling resumed using an 11-in. bit. A total depth of 123.4 m (405 ft) bgs was reached on March 21, 2001. The well was completed on March 22, 2001, as shown in Attachment A-1 and as described in Table A-3-1.

A-3.16 ICPP-SCI-P-249 Well Drilling and Completion Summary (CS-CH)

On November 30, 2000, the DR rig, equipped with a 12-in. HSA, began drilling well ICPP-SCI-P-249. On December 1, 2000, a depth of 19.3 m (63.5 ft) bgs was reached. A 6-in. carbon-steel surface casing was installed to a depth of 19.3 m (63.5 ft) bgs on December 1, 2001. Drilling continued on January 4, 2001, and the LF-70 began coring with HQ core bit. On January 11, 2001, a depth of 76.2 m (250 ft) bgs was reached. The LF-70 core rig downsized to an NQ core bit. On January 17, 2001, a total depth of 122.5 m (402 ft) bgs was reached. The well was completed on January 19, 2001, as shown in Attachment A-1 and as described in Table A-3-1.

A-3.17 ICPP-SCI-P-227 Well Drilling and Completion Summary (TF-Alluvial)

On January 18, 2001, the BAR, equipped with a 20-in. bucket, began drilling well ICPP-SCI-P-227 (Tank Farm [TF]-Alluvial). On January 19, 2001, a depth of 5.9 m (19.5 ft) bgs was reached, and a 10-in. carbon-steel surface casing was set to depth. Drilling continued with the T-4 rig equipped with an HSA. A total depth of 11.9 m (39 ft) bgs was reached on January 22, 2001. The well was completed on January 23, 2001, per the specifications in Attachment A-1 and as described in Table A-3-1.

A-3.18 ICPP-SCI-P-228 Well Drilling and Completion Summary (TF-SP)

On January 24, 2001, the BAR, equipped with a 20-in. bucket, began drilling well ICPP-SCI-P-228. During drilling, progress was delayed due to the borehole wall caving in. Water was added to the hole to stabilize the wall. On January 25, 2001, a depth of 12 m (39.5 ft) bgs was reached, and a 16-in. carbon-steel surface casing was set to depth. Drilling resumed on March 21, 2001. The Schramm rig, equipped with a 15-in. drill bit, advanced to a depth of 61.6 m (202 ft) bgs.

Well construction was delayed due to bridging of interbed material. A temporary 8-in. carbon-steel casing was run into the borehole. The temporary casing was then cleaned with a 7 3/4-in. bit. The well was constructed through the 8-in. casing. The well was completed on March 22, 2001, as described in Table A-3-1 and as shown in Attachment A-1.

A-3.19 ICPP-SCI-P-229 Well Drilling and Completion Summary (TF-DP)

On January 26, 2001, the BAR, equipped with a 24-in. bucket, began drilling well ICPP-SCI-P-229. On January 29, 2001, a depth of 12.5 m (41 ft) bgs was reached, and a 20-in. carbon-steel surface casing was set to a depth of 12.5 m (41 ft) bgs. Drilling of well ICPP-SCI-P-229 resumed on March 22, 2001. The Schramm rig, equipped with a 19-in. bit, drilled to a depth of 61.9 m (203 ft) bgs. A 12-in. carbon-steel surface casing was installed to a depth of 61.9 m (203 ft) bgs on March 24, 2001, and drilling resumed with a 10-in. bit. A total depth of 121.3 m (398 ft) bgs was reached on March 28, 2001.

Well construction was delayed due to sloughing and bridging of interbed material. An 8-in. carbon-steel temporary casing was installed to the bottom of the borehole. On March 29, 2001, the well temporary casing was cleaned with 7 5/8-in. drill bit. The well was built through the casing, removing the casing as the well was built. The well was completed on March 30, 2001, and was constructed as shown in Attachment A-1 and as described in Table A-3-1.

A-3.20 ICPP-MON-A-230 Well Drilling and Completion Summary (TF-Aquifer)

On January 25, 2001, the BAR, equipped with a 24-in. bucket, began drilling ICPP-MON-A-230. On January 26, 2001, a depth of 12.9 m (42.5 ft) bgs was reached, and a 20-in. carbon-steel surface casing was installed to a depth of 12.9 m (42.5 ft) bgs. Drilling resumed on February 27, 2001. The Schramm rig, equipped with a 19-in. bit, drilled to a depth of 66.7 m (219 ft) bgs on March 5, 2001. A 16-in. carbon-steel surface casing was installed. During installation, a bolt on the top head sheared off, dropping the casing with 48.8 m (160 ft) of casing on the string. The drillers attempted to retrieve the casing but were unsuccessful. The casing was left in place, and the annulus was filled with bentonite prior to continuing. The casing was installed from 13.1 to 61.9 m (43 to 203 ft) bgs. Drilling resumed with a 15-in. bit, and on March 7, 2001, a depth of 96 m (315 ft) bgs was reached. The Schramm was reequipped with PQ coring rods and bit and coring began. On March 12, 2001, a depth of 120.4 m (395 ft) bgs was reached. The borehole was over-reamed with the 15-in. bit. On March 13, 2001, a depth of 121.9 m (400 ft) bgs was reached.

On March 14, 2001, a 12-in. carbon-steel surface casing was installed to a depth of 121.6 m (399 ft) bgs. The Schramm was equipped with a 10-in. bit, and drilling continued. A total depth of 159.4 m (523 ft) bgs was reached on March 15, 2001. The well was completed as shown in Attachment A-1 and as described in Table A-3-1. Well completion was delayed due to bridging of interbed material. The piezometer could not be installed to the desired depth due to the bridging. After several attempts, an 8-in. carbon-steel temporary casing was installed. The casing was then cleaned by a 7 5/8-in. bit. The 6-in. stainless-steel piezometer was then successfully installed. Installation was completed on March 20, 2001.

A-3.21 ICPP-SCI-P-252 Well Drilling and Completion Summary (TF-CH)

On January 19, 2001, the BAR, equipped with a 20-in. bucket, began drilling ICPP-SCI-P-252. A depth of 11.6 m (38 ft) bgs was reached on January 23, 2001, and a 6-in. carbon-steel surface casing was installed to a depth of 11.9 m (39 ft) bgs. Drilling resumed on February 1, 2001. The UDR, equipped with PQ coring rods and bit, cored to a depth of 49.1 m (161.2 ft) bgs on February 6, 2001. On February 1, 2001, the equipment was downsized to HQ and continued to a depth of 99 m (325 ft) bgs. Coring halted at this depth when the core bit was separated from the coring rods, which allowed the core barrel to fall out. Several attempts to retrieve the core barrel were made, but all failed. The decision was made to abandon the core barrel and construct the well. The additional core footage required by the scope of work was completed during the drilling of the ICPP-MON-A-230 (TF-Aquifer). The well was completed on February 14, 2001, as shown in Attachment A-1 and as described in Table A-3-1.

A-4. SAMPLING AND ANALYSIS

Sampling activities conducted during the coring, drilling, and well construction were conducted in accordance with INEEL policy. Documents guiding the sampling activities included:

- DOE/ID-10587, *Quality Assurance Project Plan for Waste Area Groups 1, 2, 3, 4, 5, 6, 7, 10, and Inactive Sites*
- DOE/ID-10749, *Waste Management Plan for Operable Unit 3-13, Group 4 Perched Water (Draft)*
- INEEL/EXT-2000-00257, *Health and Safety Plan for the WAG 3, Operable Unit 3-13, Vadose Zone Well Drilling and Monitoring Project*
- MCP-227, "Sampling and Analysis Process for Environmental Management Funded Activities"
- MCP-230, "Environmental Restoration Document Control Center Interface"
- MCP-231, "Logbooks"
- MCP-244, "Chain of Custody, Sample Handling and Packaging for CERCLA Activities"
- MCP-2725, "Field Work at the INEEL"
- MCP-2727, "Performing Safety Reviews"
- MCP-2864, "Sample Management"
- MCP-3003, "Performing Pre-Job Briefings and Post-Job Reviews"
- Manual #14A, *Safety and Health Manual*
- Manual #15B, *Radiation Protection Manual*
- TPR-52, "Field Decontamination of Sampling Equipment"
- TPR 56/SOP 11.8, "Groundwater Sampling"
- TPR-61, "Soil Sampling"
- TPR-79, "Levels of Analytical Method Data Validation."

Interbed samples were collected at each corehole. Basalt fragments were collected from the length of the core; each fragment was a negligible portion of the core, and therefore the specific portion or depth of each fragment was not noted. Composite samples of drill cuttings were also removed for geochemical and radiological analysis. Water generated during drilling operations was also sampled as a composite for radiological analysis. Table A-4-1 summarizes the samples collected during drilling activities. Field sampling activities were recorded in logbook No. ER-06-01. Sampling requirements and specifications are found in the *Field Sampling Plan for the Operable Unit 3-13, Group 4, Perched Water Well Installation* (DOE-ID 2000).

Table A-4-1. Sampling and analysis.

Sample ID	Well Alias or Sample Location	Collection Date	Sampled Interval (ft)	Sample Type	Sample Material	Sample Container	Analysis
PWD069012C	BLR-CH	6Dec00	36.6-116	Normal	Basalt chips	500mL squat jar	GC/MS, isotopic ratios
PWD07001YH	BLR-CH	12Dec00	87-87.5	Normal	Sedimentary interbed	Lexan core tube	Hydrologic and geotechnical properties
PWD07101AN	BLR-CH	12Dec00	87.5-88	Normal	Sedimentary interbed	500mL squat jar	Anions, cations, pH, metals
PWD07101LA	BLR-CH	7Dec00	116-116.5	Normal	Sedimentary interbed	500mL squat jar	Anions, cations, pH, metals
PWD072012C	BLR-CH	12Dec00	167.6-168.3	Normal	Sedimentary interbed	500mL squat jar	GC/MS, isotopic ratios
PWD07201GX	BLR-CH	8Dec00	167.6-168.3	Normal	Sedimentary interbed	Lexan core tube	Hydrologic and geotechnical properties
PWD07201YH	BLR-CH	7Dec00	167.6-168.3	Normal	Sedimentary interbed	Lexan core tube	Hydrologic and geotechnical properties
PWD06601YH	BLR-CH	13Dec00	10-10.5	Normal	Subsurface soil	Lexan core tube	Hydrologic and geotechnical properties
PWD06701YH	BLR-CH	13Dec00	18-18.5	Normal	Subsurface soil	Lexan core tube	Hydrologic and geotechnical properties
PWD074012C	BLR-CH	20Dec00	258-333	Normal	Basalt chips	500mL squat jar	GC/MS, isotopic ratios
PWD06801GX	BLR-alluvial	14Dec00	33-34	Normal	Subsurface soil	Lexan core tube	Hydrologic and geotechnical properties
PWD06802GX	BLR-alluvial	14Dec00	34-35	Normal	Subsurface soil	Lexan core tube	Hydrologic and geotechnical properties
PWD01601LA	Frac tank @ BLR	27Mar01	40-400	Normal	Basalt, sedimentary interbed cuttings	500mL plastic squat jar	Metals
PWD01601RN	Frac tank @ CH	27Mar01	40-400	Normal	Grab	Basalt, sedimentary interbed cuttings	500mL plastic squat jar
PWD054012C	STL-CH	14Dec00	16	Normal	Subsurface soil	500mL squat jar	GC/MS, isotopic ratios
PWD05401GX	STL-CH	14Dec00	19-19.5	Normal	Subsurface soil	Lexan core tube	Hydrologic and geotechnical properties
PWD054022C	STL-CH	14Dec00	19	Normal	Subsurface soil	500mL squat jar	GC/MS, isotopic ratios
PWD05402GX	STL-CH	14Dec00	19-19.5	Normal	Subsurface soil	Lexan core tube	Hydrologic and geotechnical properties
PWD05501GX	STL-CH	14Dec00	30.5-31	Normal	Subsurface soil	Lexan core tube	Hydrologic and geotechnical properties

Table A-4-1. (continued).

Sample ID	Well Alias or Sample Location	Collection Date	Sampled Interval (ft)	Sample Type	Sample Material	Sample Container	Analysis
PWD05701GX	STL-CH	12Jan01	103-103.8	Normal	Sedimentary interbed	Lexan core tube	Hydrologic and geotechnical properties
PWD05801AN	STL-CH	12Jan01	104	Normal	Sedimentary interbed	500mL squat jar	Anions, cations, pH, metals
PWD059012C	STL-CH	15Jan01	109.5	Normal	Sedimentary interbed	500mL squat jar	GC/MS, isotopic ratios
PWD05901GX	STL-CH	15Jan01	108.5-109.5	Normal	Sedimentary interbed	Lexan core tube	Hydrologic and geotechnical properties
PWD06001GX	STL-CH	15Jan01	114-114.7	Normal	Sedimentary interbed	Lexan core tube	Hydrologic and geotechnical properties
PWD056012C	CS-CH	17Jan01	34.3-104	Normal	Basalt chips	500mL squat jar	GC/MS, isotopic ratios
PWD61012C	STL-CH	25Jan01	115-400	Normal	Basalt chips	500mL squat jar	GC/MS, isotopic ratios
PWD06301AN	STL-CH	2Feb01	385	Normal	Sedimentary interbed	500mL squat jar	GC/MS, isotopic ratios
PWD064012C	STL-CH	2Feb01	385	Normal	Sedimentary interbed	500mL squat jar	GC/MS, isotopic ratios
PWD01101LA	Frac tank @ STL	28Mar01	40-400	Normal	Basalt, sedimentary interbed cuttings	500mL plastic squat jar	Metals
PWD01101RN	Frac tank @ STL	28Mar01	40-400	Normal	Basalt, sedimentary interbed cuttings	500mL plastic squat jar	Metals
PWD07901GX	TF-CH	10Jan01	20-23	Normal	Subsurface soil	Lexan core tube	Hydrologic and geotechnical properties
PWD08001GX	TF-CH	10Jan01	26-27	Normal	Subsurface soil	Lexan core tube	Hydrologic and geotechnical properties
PWD08101GX	TF-CH	10Jan01	41-42.5	Normal	Subsurface soil	Lexan core tube	Hydrologic and geotechnical properties
PWD080012C	TF-CH	10Jan01	27-27.4	Normal	Subsurface soil	500mL squat jar	Anions, cations, pH, metals
PWD08301GX	TF-CH	5Feb01	144.6-152.2	Normal	Sedimentary interbed	Lexan core tube	Hydrologic and geotechnical properties
PWD08401AN	TF-CH	5Feb01	144.6-152.2	Normal	Sedimentary interbed	500mL squat jar	Anions, cations, pH, metals
PWD085012C	TF-CH	5Feb01	154.5-156.2	Normal	Sedimentary interbed	500mL squat jar	GC/MS, isotopic ratios
PWD08501GX	TF-CH	5Feb01	154.5-156.2	Normal	Sedimentary interbed	Lexan core tube	Hydrologic and geotechnical properties
PWD02101LA	Frac tank @ TF	28Mar01	42-400	Normal	Basalt, sedimentary interbed cuttings	500mL plastic squat jar	Metals
PWD02101RN	Frac tank @ TF	28Mar01	42-400	Normal	Basalt, sedimentary interbed cuttings	500mL plastic squat jar	Metals

Table A-4-1. (continued).

Sample ID	Well Alias or Sample Location	Collection Date	Sampled Interval (ft)	Sample Type	Sample Material	Sample Container	Analysis
PWD09001GX	CS-DP	18Dec00	10-10.5	Normal	Subsurface soil	Lexan core tube	Hydrologic and geotechnical properties
PWD09401GX	CS-DP	18Dec00	19-20	Normal	Subsurface soil	Lexan core tube	Hydrologic and geotechnical properties
PWD095012C	CS-DP	18Dec00	45-46	Normal	Subsurface soil	500mL squat jar	Anions, cations, pH, metals
PWD09501GX	CS-DP	18Dec00	45-46	Normal	Subsurface soil	Lexan core tube	Hydrologic and geotechnical properties
PWD09601GX	CS-DP	18Dec00	51-52	Normal	Subsurface soil	Lexan core tube	Hydrologic and geotechnical properties
PWD051012C	CS-CH	11Jan01	164.2	Normal	Sedimentary interbed	500mL squat jar	GC/MS, isotopic ratios
PWD05001XC	CS-CH	11Jan01	164.2	Normal	Sedimentary interbed	500mL squat jar	Anions, cations, pH, metals
PWD05101GX	CS-CH	11Jan01	164.2-164.7	Normal	Sedimentary interbed	Lexan core tube	Hydrologic and geotechnical properties
PWD043012C	CS-CH	12Jan01	65-164	Normal	Basalt chips	500mL squat jar	GC/MS, isotopic ratios
PWD04401GX	CS-CH	16Jan01	376-377.5	Normal	Sedimentary interbed	Lexan core tube	Hydrologic and geotechnical properties
PWD04501AN	CS-CH	16Jan01	376-377.5	Normal	Sedimentary interbed	500mL squat jar	Anions, cations, pH, metals
PWD04601GX	CS-CH	16Jan01	381.8-382.8	Normal	Sedimentary interbed	Lexan core tube	Hydrologic and geotechnical properties
PWD04701GX	CS-CH	16Jan01	387.1-388.2	Normal	Sedimentary interbed	Lexan core tube	Hydrologic and geotechnical properties
PWD04702GX	CS-CH	16Jan01	387.1-388.2	Normal	Sedimentary interbed	Lexan core tube	Hydrologic and geotechnical properties
PWD046012C	CS-CH	16Jan01	381.8-382.8	Normal	Sedimentary interbed	500mL squat jar	GC/MS, isotopic ratios
PWD048012C	CS-CH	17Jan01	164-360	Normal	Basalt chips	500mL squat jar	GC/MS, isotopic ratios
PWD00601LA	Frac tank @ CH	27Mar01	60-400	Normal	Basalt, sedimentary interbed cuttings	500mL plastic squat jar	Metals
PWD00601RN	Frac tank @ CH	27Mar01	60-400	Normal	Basalt, sedimentary interbed cuttings	500mL plastic squat jar	Metals
PWD03001GX	PP-CH	13Dec00	15-15.5	Normal	Subsurface soil	Lexan tube	Hydrologic and geotechnical properties
PWD031012C	PP-CH	13Dec00	23-24	Normal	Subsurface soil	500mL squat jar	GC/MS, isotopic ratios

Table A-4-1. (continued).

Sample ID	Well Alias or Sample Location	Collection Date	Sampled Interval (ft)	Sample Type	Sample Material	Sample Container	Analysis
PWD03101GX	PP-CH	13Dec00	26-26.5	Normal	Subsurface soil	Lexan tube	Hydrologic and geotechnical properties
PWD03201GX	PP-CH	13Dec00	31-31.5	Normal	Subsurface soil	Lexan tube	Hydrologic and geotechnical properties
PWD03501AN	PP-CH	25Jan01	111.45	Normal	Sedimentary interbed	500mL squat jar	Anions, cations, pH, metals
PWD03401GX	PP-CH	25Jan01	110.8-111.45	Normal	Sedimentary interbed	Lexan core tube	Hydrologic and geotechnical properties
PWD036012C	PP-CH	25Jan01	122.9	Normal	Sedimentary interbed	500mL squat jar	GC/MS, isotopic ratios
PWD03601GX	PP-CH	25Jan01	122.2-122.9	Normal	Sedimentary interbed	Lexan core tube	Hydrologic and geotechnical properties
PWD033012C	PP-CH	25Jan01	25-111	Normal	Basalt chips	500mL squat jar	GC/MS, isotopic ratios
PWD03701GX	PP-CH	25Jan01	132.7-133.1	Normal	Sedimentary interbed	Lexan core tube	Hydrologic and geotechnical properties
PWD09801AN	PP-CH	30Jan01	168	Normal	Sedimentary interbed	500mL squat jar	Anions, cations, pH, metals
PWD09701GX	PP-CH	30Jan01	165.9-168	Normal	Sedimentary interbed	Lexan core tube	Hydrologic and geotechnical properties
PWD09901GX	PP-CH	30Jan01	168-173.3	Normal	Sedimentary interbed	Lexan core tube	Hydrologic and geotechnical properties
PWD099012C	PP-CH	30Jan01	170	Normal	Sedimentary interbed	500mL squat jar	GC/MS, isotopic ratios
PWD038012C	PP-CH	2Feb01	140-379	Normal	Sedimentary interbed	500mL squat jar	GC/MS, isotopic ratios
PWD03901GX	PP-CH	8Feb01	384-385.1	Normal	Sedimentary interbed	Lexan core tube	Hydrologic and geotechnical properties
PWD04001AN	PP-CH	8Feb01	384	Normal	Sedimentary interbed	500mL squat jar	Anions, cations, pH, metals
PWD041012C	PP-CH	8Feb01	384	Normal	Sedimentary interbed	500mL squat jar	GC/MS, isotopic ratios
PWD04101GX	PP-CH	8Feb01	384-384.4	Normal	Sedimentary interbed	Lexan core tube	Hydrologic and geotechnical properties
PWD00101RN	Frac tank @PP	16Mar01	31-400	Normal	Basalt, sedimentary interbed cuttings	500mL plastic squat jar	Metals
PWD00101LA	Frac tank @PP	16Mar01	31-400	Normal	Basalt, sedimentary interbed cuttings	500mL plastic squat jar	Metals

A-5. DECONTAMINATION PAD CLOSEOUT

A-5.1 Background

A cleanup or decontamination pad was constructed in the INTEC CERCLA Satellite Accumulation Area (SAA), CPP-1781. The decontamination pad was used when rinsing the drill rig before and after it was used to collect environmental samples. The drill rig was also rinsed after it was used to drill into the perched water bodies in the northern perched water zone. This was due to the possibility of the perched water bodies being contaminated by and monitored for F001, F002, F005, and U134 code contaminants. The drill rig was monitored for detectable levels of radioactive contamination during all phases of the drilling operation. No radioactive contamination was detected by field instruments or by smears measured by INTEC radiological control technicians (RCT) in the INTEC RCT laboratory.

The decontamination pad was constructed by using an impermeable liner under the drill rig and over a wooden frame surrounding the pad. The decontamination rinsate was collected and stored in the CERCLA SAA.

After use of the decontamination pad, a tear was detected in the impermeable liner. No decontamination effluent was observed to be in contact with the area of the tear, nor was there any indication of staining or discoloration of the soil beneath the area of the tear. A small spill of decontamination effluent was found in the northwest corner of the pad. This area was cleaned up, and the material was sent to the CERCLA SAA.

A-5.2 Sampling

Waste Generator Services (WGS) wrote a sampling plan entitled *Emergency Sampling Job CPP 1789 Gravel Area* (WGS-054-01), and WGS personnel conducted the sampling on August 27, 2001. The sampling involved collection of materials from three locations. The two possible areas of contamination and a third background area were sampled for toxicity-characterization-leaching-procedure metals, semi-volatile organic compounds, and volatile organic compounds. Duplicate samples were also collected at each location. The samples were collected from the upper 6 in. of soil through the use of a hand-powered soil auger in accordance with Technical Procedure (TPR-) 6671 (INEEL 2001).

A-5.3 Closeout Results

Analytical data were reported from the laboratories and validated by the Sample Management Office at method validation Level B, as defined in TPR-79 (INEEL 1995). Sampling data confirmed that no contamination was present in the soil below the decontamination pad. The decontamination pad was demobilized at the termination of the project. The sampling plan, sampling logbook, and analytical results are provided in Attachment A-4.

A-6. REFERENCES

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MCP-231—Logbooks.

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MCP-2725—Field Work at the INEEL.

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TPR-79—"Levels of Analytical Method Data Validation."

Attachment A-1

Well Construction Diagrams and Associated Lithologies

WELL NAME: **ICPP-SCI-P-216**

Facility: INTEC

Well Type: Instrumentation

Well Status: Active

Year Drilled: 2001

Total Depth: 35'5"

Completion Depth: ——

Brass Cap

Easting: 296190.33(27) (83)

Northing: 696438.07(27) (83)

Longitude: 1125608.65(27) (83)

Latitude: 433430.43(27) (83)

Measuring Point

Easting: 296189.36(27) (83)

Northing: 696437.99(27) (83)

Longitude: 1125609.67(27) (83)

Latitude: 433430.43(27) (83)

Driller: Dynatec/S. Flemming

Geologist: C. Johannesen

Drill Method: Hollow Stem Auger

Drill Fluid: Air

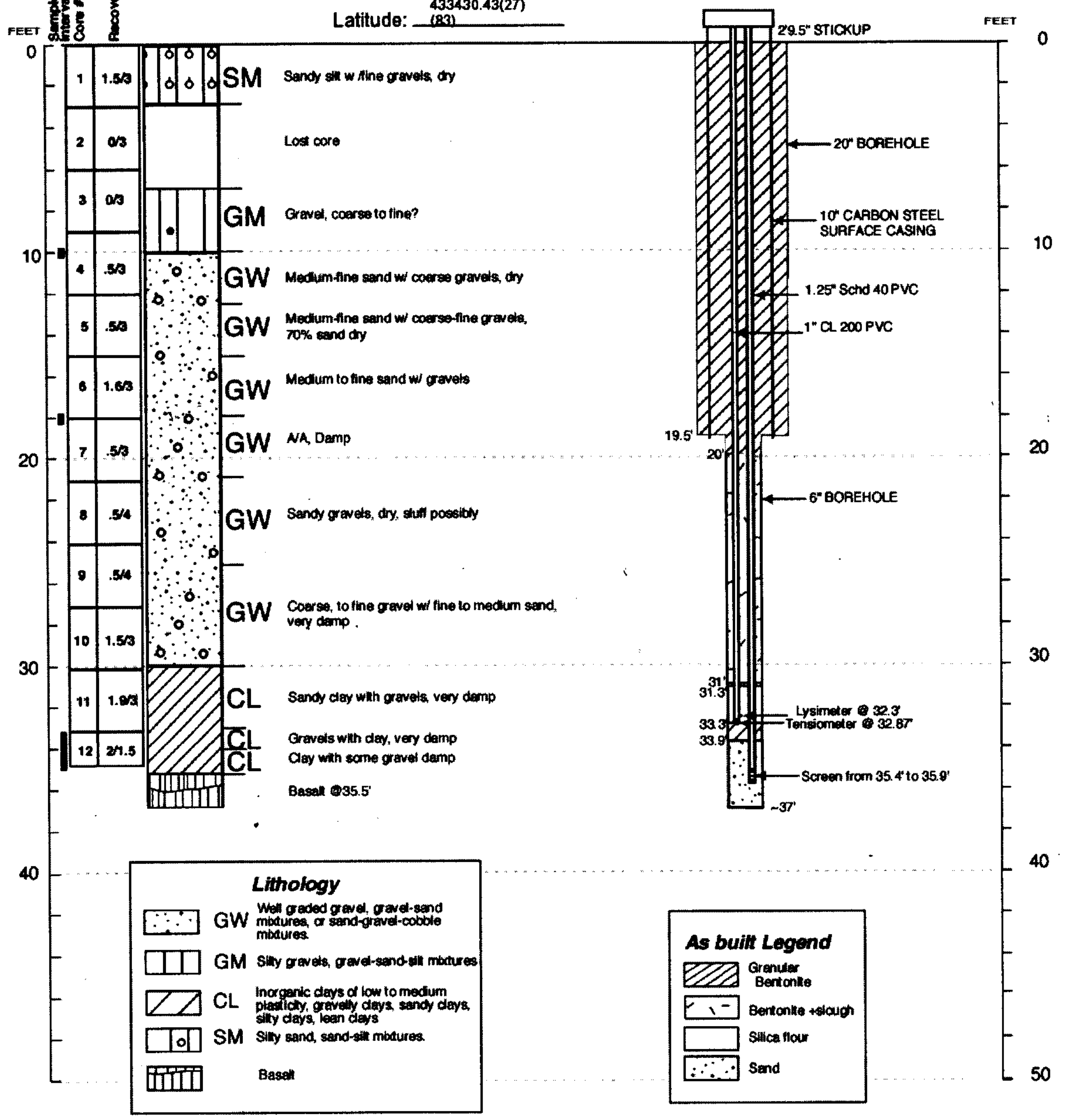
Land Surface: 4913.64(29)BC (88)BC 4916.11(29)MP (88)MP

Date: 6/5/01

Water Level: n/a

Water Level Date:

Water Level Access: 1 1/4 piezo



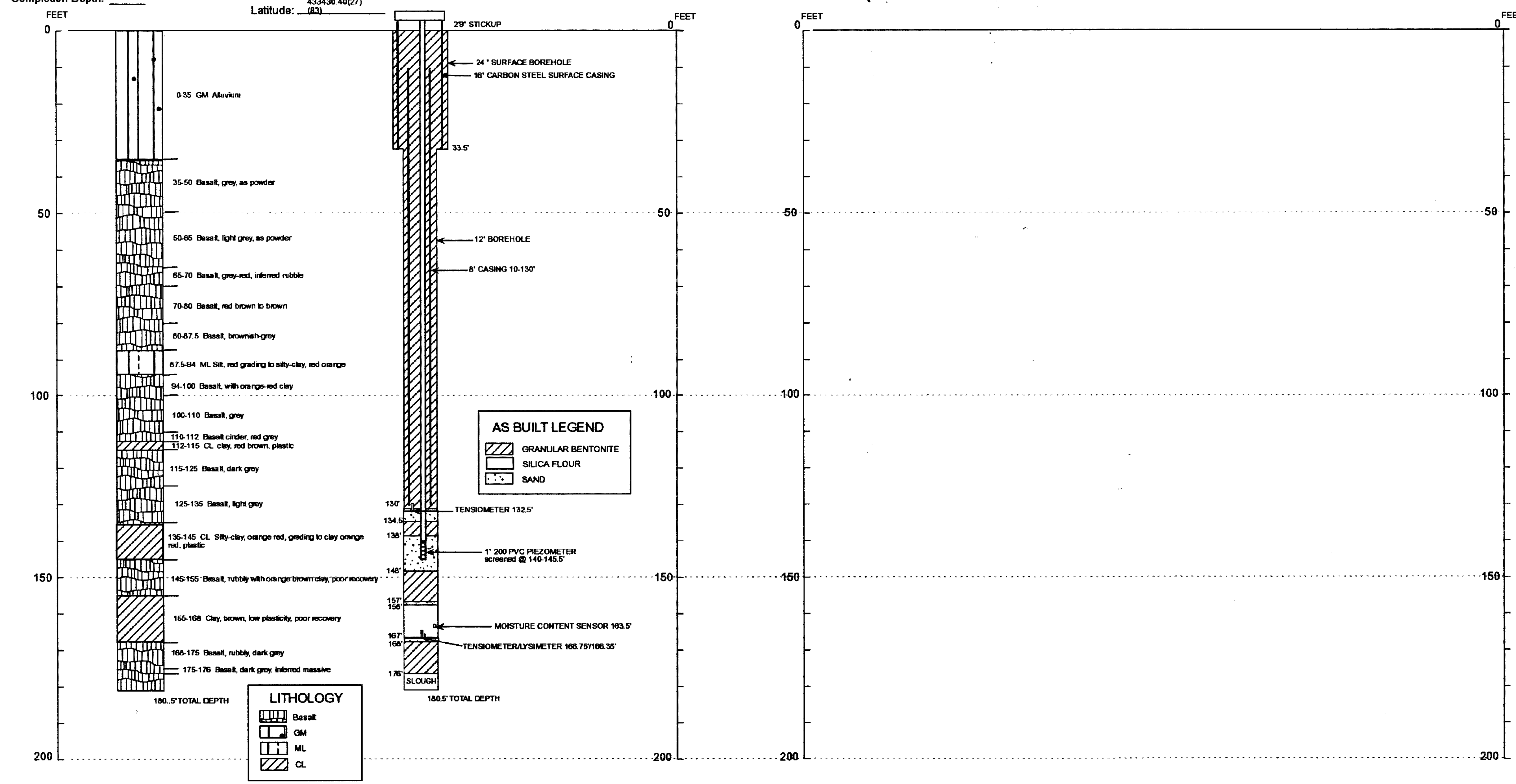
WELL NAME: ICPP-SCI-P-217
Facility: INTEC
Well Type: piezometer
Well Status: Active
Year Drilled: 2001
Total Depth: 180.5'
Start Date: 2/7/01
End Date: 2/8/01
Completion Depth: 113'10"

Brass Cap
Easting: 296150.91(27) (83) 696435.54(27)
Northing: (83) 1125609.19(27)
Longitude: (83) 433430.40(27)
Latitude: (83)

Measuring Point
Easting: 296149.81(27) (83)
Northing: 696435.38(27) (83)
Longitude: 1125609.20(27) (83)
Latitude: 433430.40(27) (83)

Driller: Dynatec/Flemming
Geologist: C. Johannesen
Drill Method: Reverse Air Rotary
Drill Fluid: Air
Land Surface: 4913.73(29)BC (88)BC 4916.18(29)MP (88)MP

Todays Date: 7/10/01
Water Level:
Water Level Date:
Water Level Access:



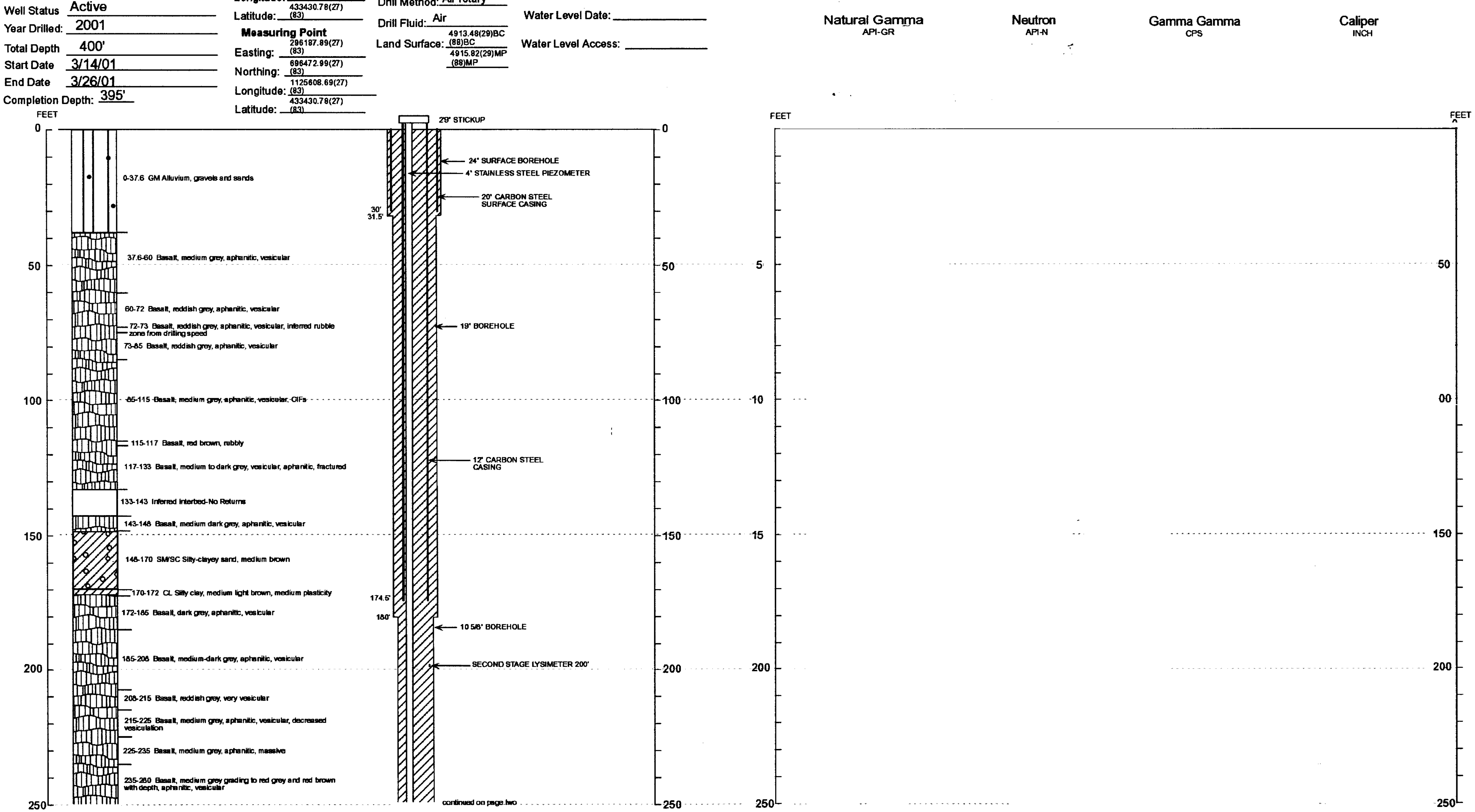
WELL NAME: ICPP-SCI-P-218
Facility: INTEC
Well Type: Instrumented-piezometer
Well Status: Active
Year Drilled: 2001
Total Depth: 400'
Start Date: 3/14/01
End Date: 3/26/01
Completion Depth: 395'

Brass Cap
Easting: 296188.99(27) (83)
Northing: 696473.04(27) (83)
Longitude: 1125608.68(27) (83)
Latitude: 433430.78(27) (83)

Measuring Point
Easting: 296187.89(27) (83)
Northing: 696472.99(27) (83)
Longitude: 1125608.69(27) (83)
Latitude: 433430.78(27) (83)

Driller: Dynatec/Tawater
Geologist: G. Oberhansley
Drill Method: Air rotary
Drill Fluid: Air
Land Surface: 4913.48(29)BC (88)BC 4915.82(29)MP (88)MP

Todays Date: 7/12/01
Water Level:
Water Level Date:
Water Level Access:



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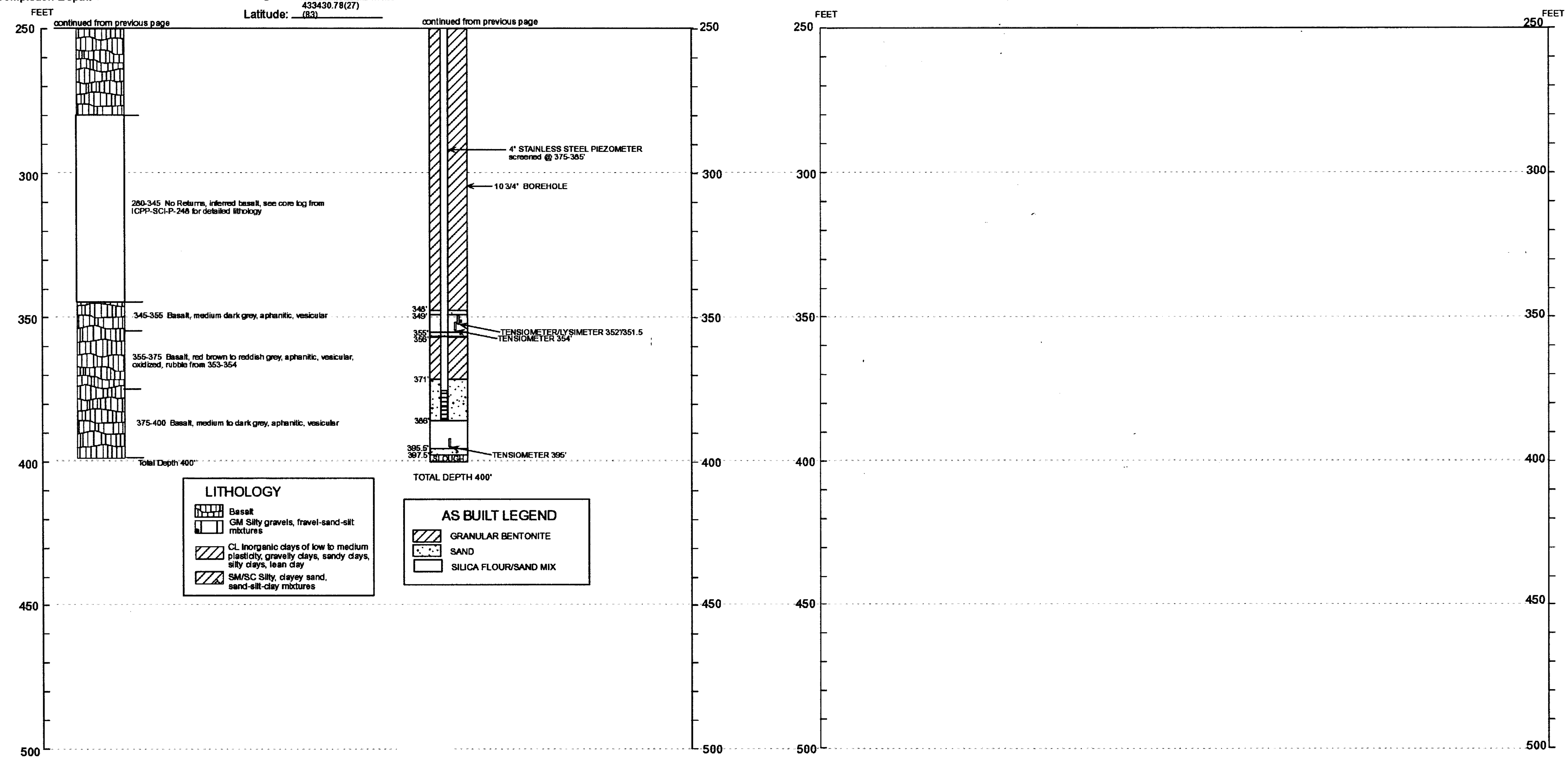
WELL NAME: ICPP-SCI-P-218 PAGE 2
Facility: INTEC
Well Type: Piezometer
Well Status Active
Year Drilled: 2001
Total Depth 400'
Start Date 3/14/01
End Date 3/26/01
Completion Depth: 395'

Brass Cap
Easting: 296188.99(27) (83)
Northing: 696473.04(27) (83)
Longitude: 1125608.68(27) (83)
Latitude: 433430.78(27) (83)

Measuring Point
Easting: 296187.89(27) (83)
Northing: 696472.99(27) (83)
Longitude: 1125608.69(27) (83)
Latitude: 433430.78(27) (83)

Driller: Dynatec/Tawater
Geologist: G. Oberhansley
Drill Method: Air rotary
Drill Fluid: Air
Land Surface: 4913.48(29)BC (88)BC 4915.82(29)MP (88)MP

Todays Date: 7/12/01
Water Level:
Water Level Date:
Water Level Access:



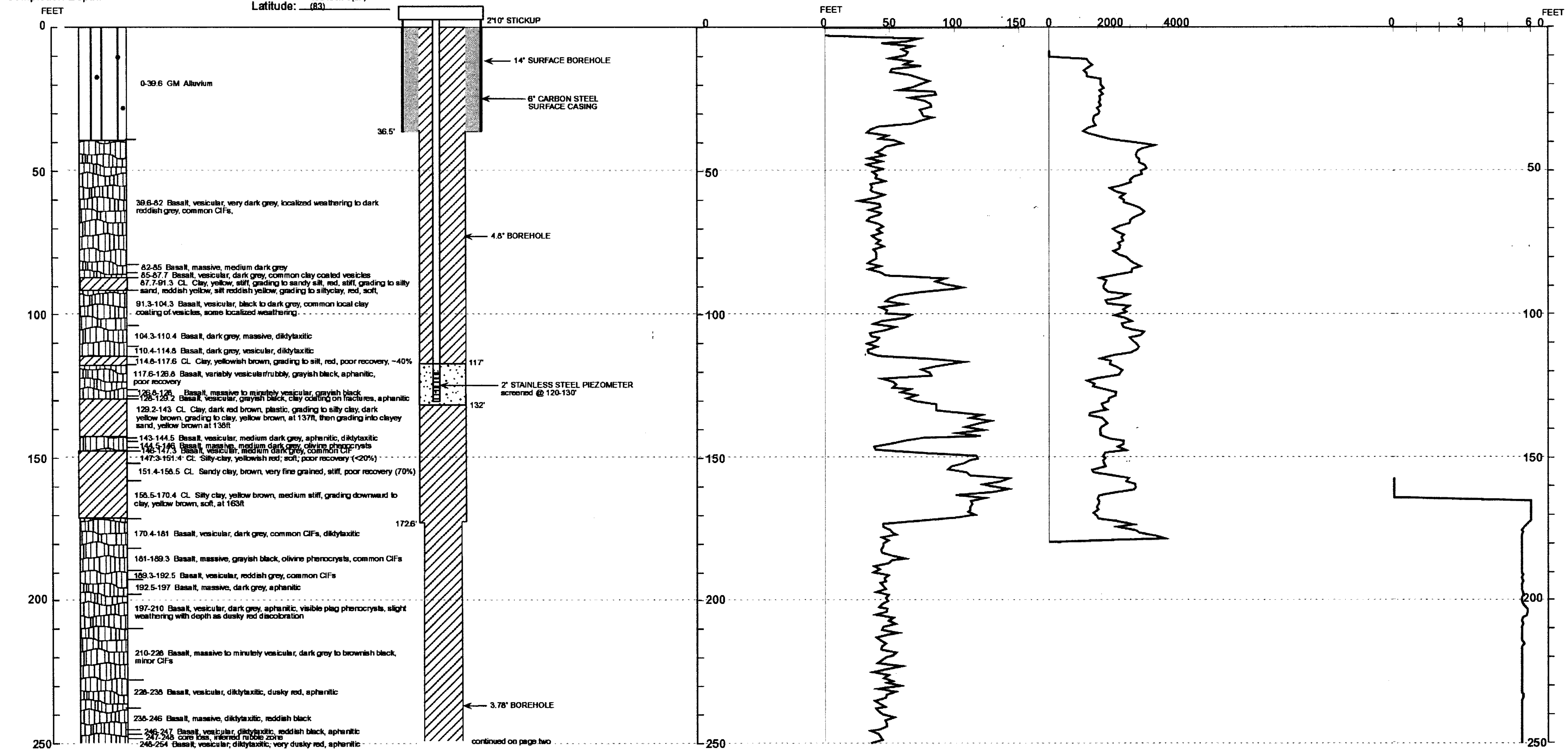
WELL NAME: ICPP-SCI-P-248
Facility: INTEC
Well Type: Instrumented-piezometer
Well Status: Active
Year Drilled: 2001
Total Depth: 414.7'
Start Date: 12/5/00
End Date: 1/3/01
Completion Depth: 130'

Brass Cap
Easting: 296150.93(27) (83)
Northing: 698472.53(27) (83)
Longitude: 1125609.19(27) (83)
Latitude: 433430.77(27) (83)

Measuring Point
Easting: 296149.97(27) (83)
Northing: 698472.11(27) (83)
Longitude: 1125609.21(27) (83)
Latitude: 433430.76(27) (83)

Driller: Dynatec/Denevan
Geologist: C. Martin
Drill Method: Air rotary
Drill Fluid: Air
Land Surface: 4913.52(29)BC (88)BC 4916.06(29)MP (88)MP

Todays Date: 7/9/01
Water Level:
Water Level Date:
Water Level Access:



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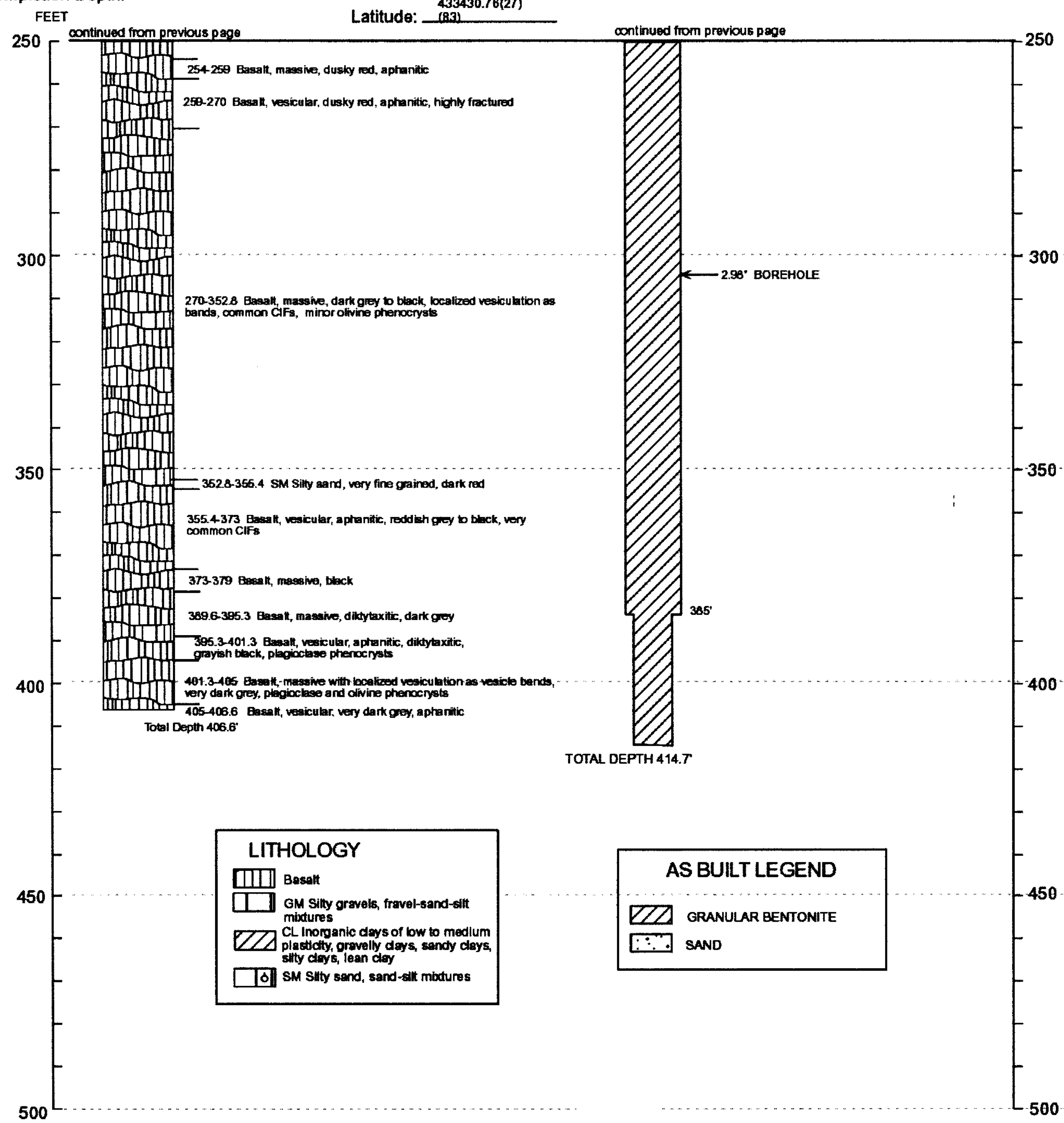
WELL NAME: ICPP-SCI-P-248 PAGE 2
Facility: INTEC
Well Type: Piezometer
Well Status Active
Year Drilled: 2001
Total Depth 406.6'
Start Date 12/5/00
End Date 1/3/01
Completion Depth: 130'

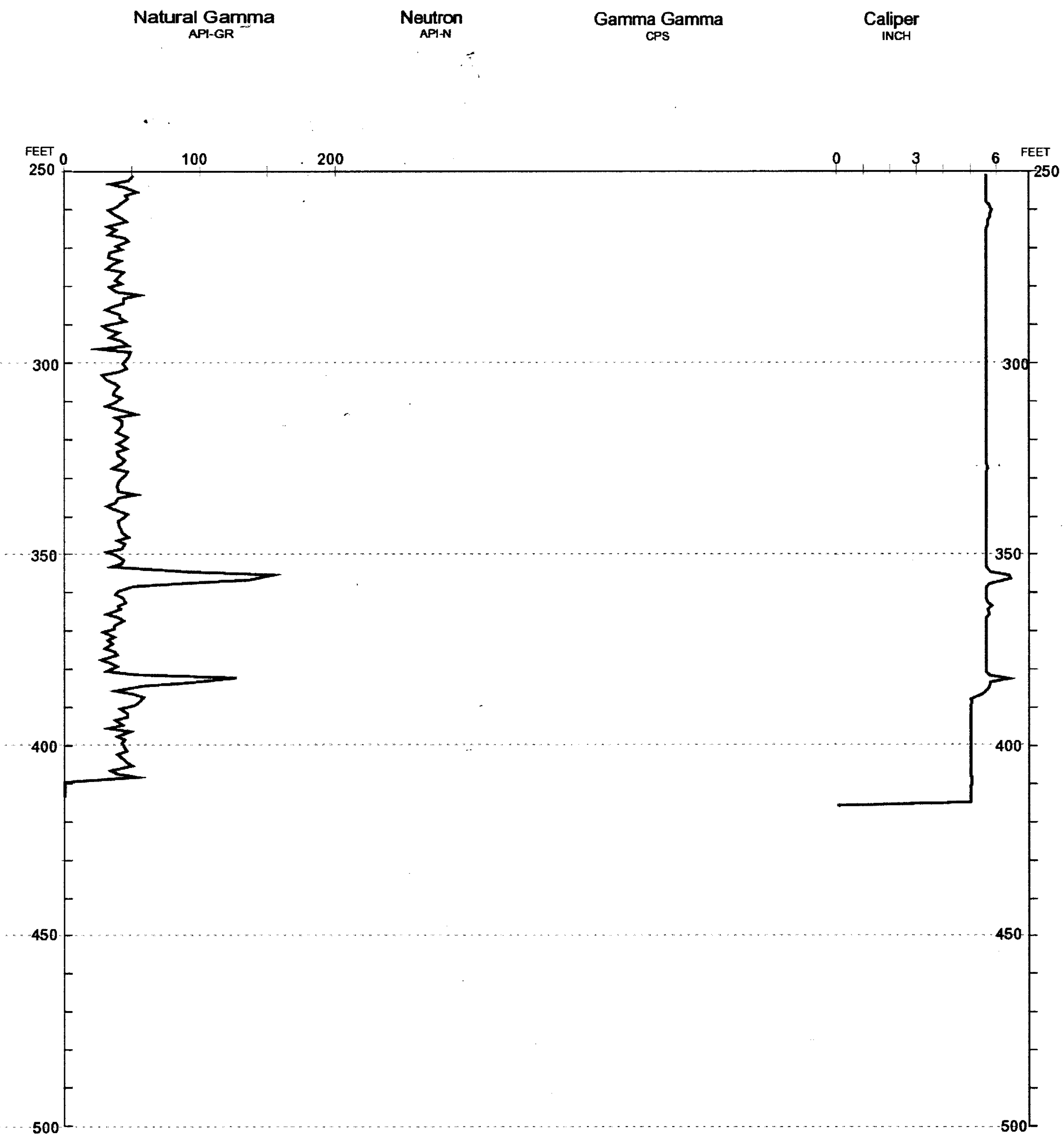
Brass Cap
Easting: 296150.93(27) (83)
Northing: 696472.53(27) (83)
Longitude: 1125609.19(27) (83)
Latitude: 433430.77(27) (83)

Measuring Point
Easting: 296149.97(27) (83)
Northing: 696472.11(27) (83)
Longitude: 1125609.21(27) (83)
Latitude: 433430.76(27) (83)

Driller: Dynatec/Denevan
Geologist: C. Martin
Drill Method: Air rotary
Drill Fluid: Air
Land Surface: 4913.52(29)BC (88)BC 4916.06(29)MP (88)MP

Todays Date: 7/9/01
Water Level:
Water Level Date:
Water Level Access:





WELL NAME: **ICPP-SCI-P-219**

Facility: INTEC

Well Type: Instrumentation

Well Status: Active

Year Drilled: 2001

Total Depth: 31.5'

Completion Depth: 31.5'

Brass Cap

Easting: 297750.48(27) (83)

Northing: 696380.01(27) (83)

Longitude: 1125547.46(27) (83)

Latitude: 433430.00(27) (83)

Measuring Point

Easting: 297749.42(27) (83)

Northing: 696379.65(27) (83)

Longitude: 1125547.47(27) (83)

Latitude: 433430.00(27) (83)

Driller: Dynatec/S. Flemming

Geologist: C. Johannesen

Drill Method: Hollow Stem Auger

Drill Fluid: Air

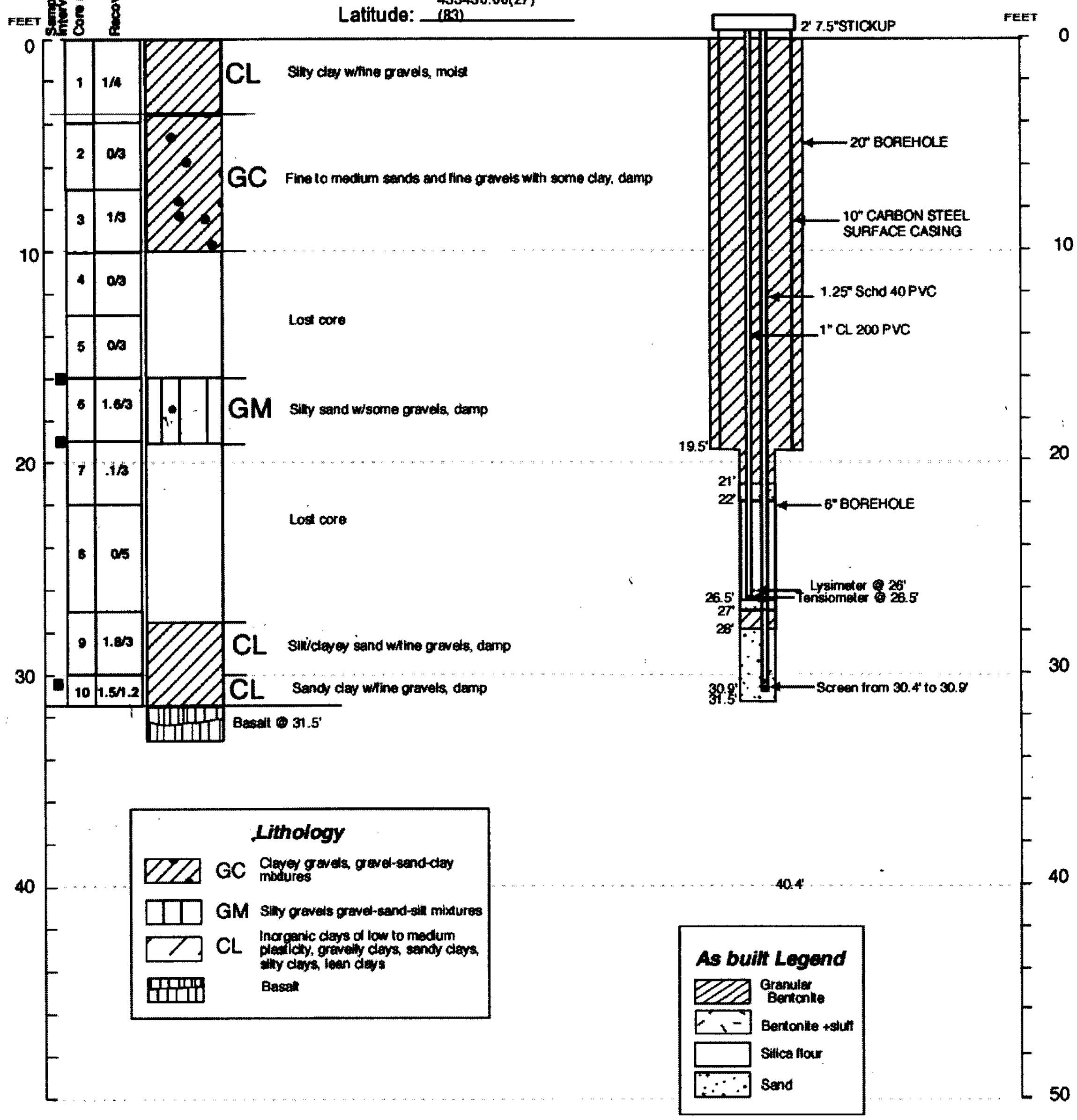
Land Surface: 4909.31(29)BC (88)BC 4911.63(29)MP (88)MP

Date: 6/6/01

Water Level: n/a

Water Level Date:

Water Level Access: 1 1/4 piezo



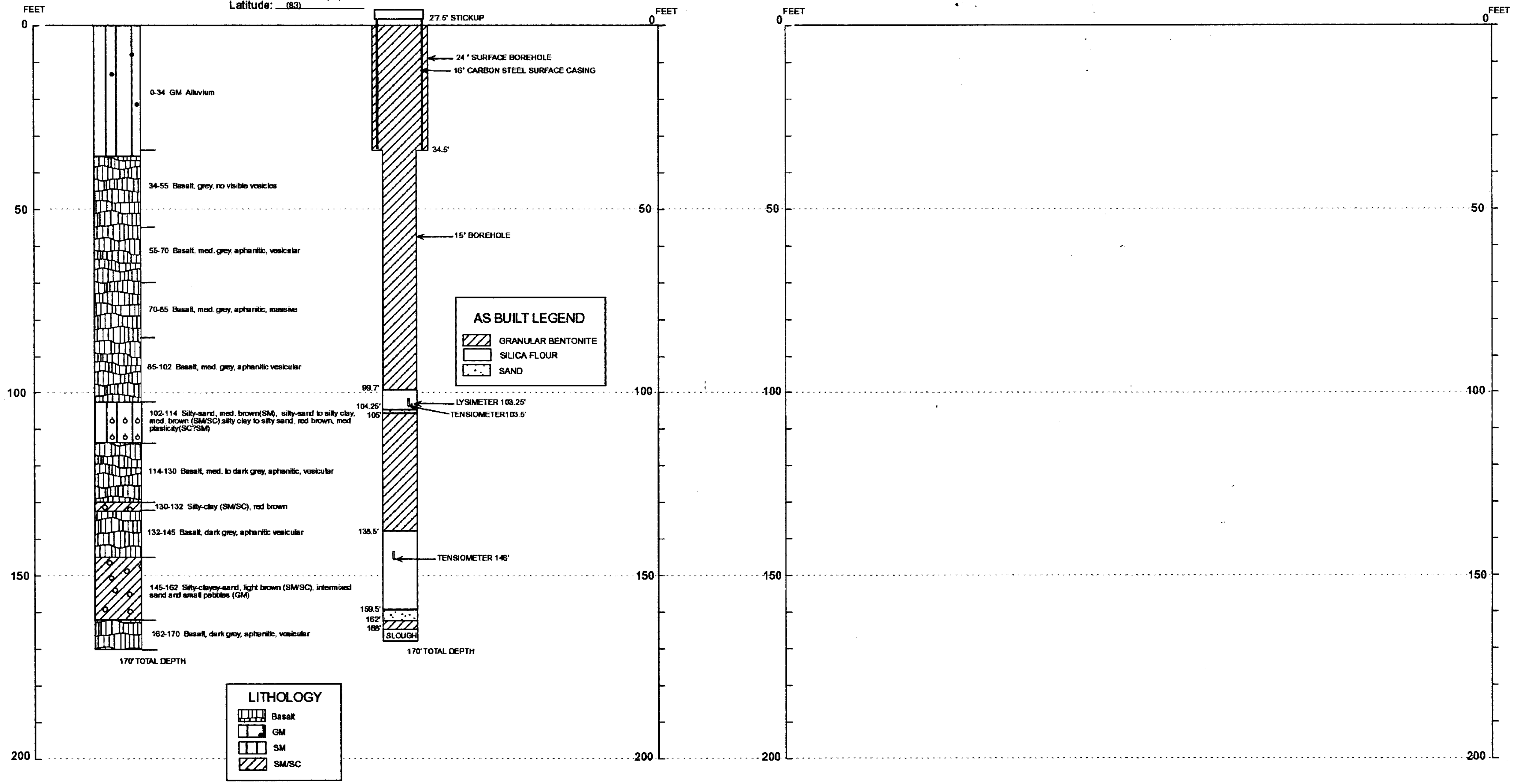
WELL NAME: ICPP-SCI-P-220
Facility: INTEC
Well Type: piezometer
Well Status: Active
Year Drilled: 2001
Total Depth: 170'
Start Date: 3/27/01
End Date: 3/28/01
Completion Depth: 168'

Brass Cap
Easting: 297780.87(27) (83)
Northing: 696412.87(27) (83)
Longitude: 1125547.05(27) (83)
Latitude: 433430.33(27) (83)

Measuring Point
Easting: 297779.86(27) (83)
Northing: 696412.39(27) (83)
Longitude: 1125547.06(27) (83)
Latitude: 433430.32(27) (83)

Driller: Dynatec/Flemming
Geologist: G. Oberhansley
Drill Method: Reverse Air Rotary
Drill Fluid: Air
Land Surface: 4909.44(29)BC (88)BC 4911.75(29)MP (88)MP

Todays Date: 7/11/01
Water Level:
Water Level Date:
Water Level Access:



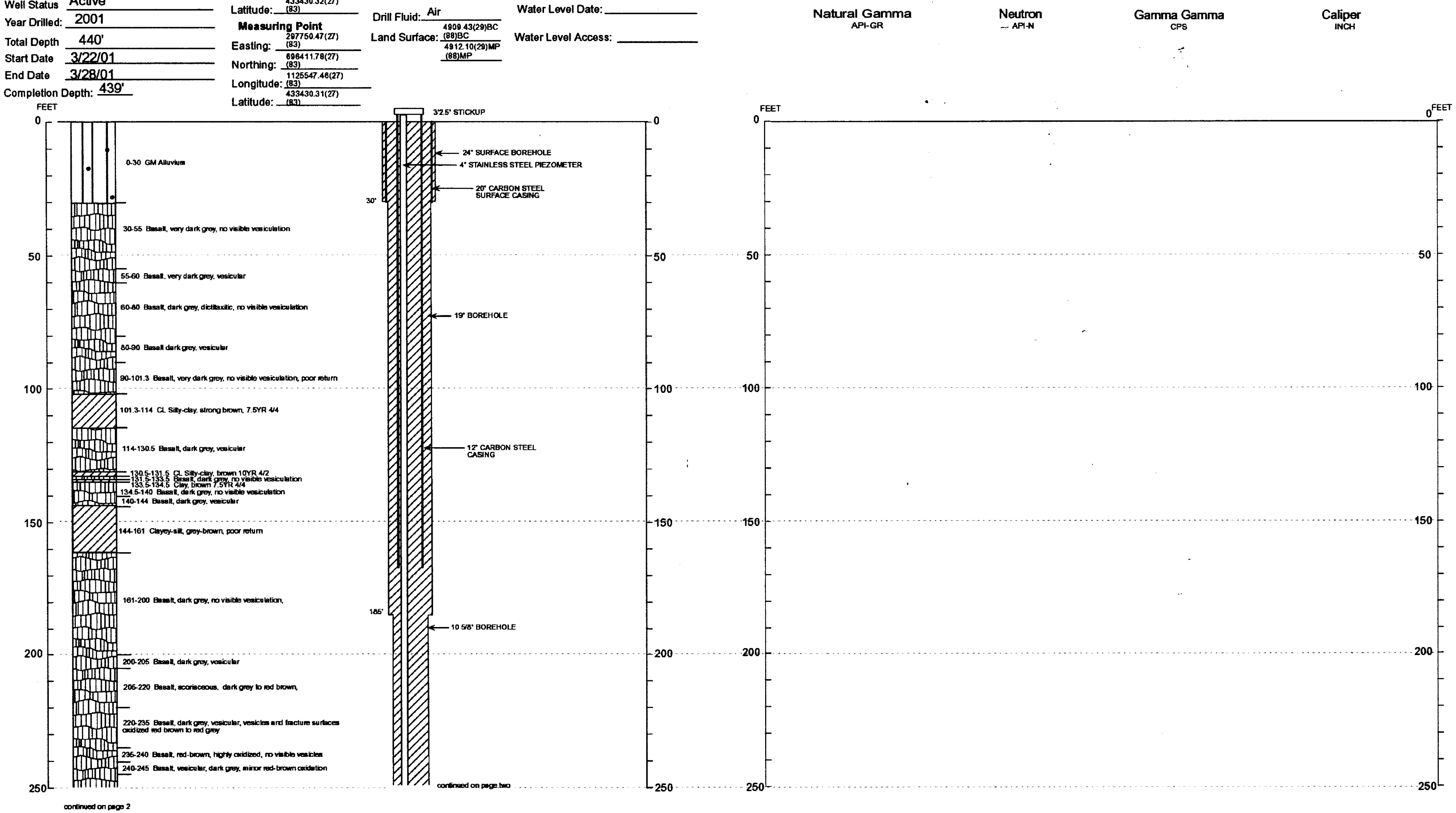
WELL NAME: ICPP-SCI-P-221
Facility: INTEC
Well Type: Instrumented-piezometer
Well Status: Active
Year Drilled: 2001
Total Depth: 440'
Start Date: 3/22/01
End Date: 3/28/01
Completion Depth: 439'

Brass Cap
Easting: 297751.87(27) (83)
Northing: 696412.21(27) (83)
Longitude: 1125547.44(27) (83)
Latitude: 433430.32(27) (83)

Measuring Point
Easting: 297750.47(27) (83)
Northing: 696411.78(27) (83)
Longitude: 1125547.46(27) (83)
Latitude: 433430.31(27) (83)

Driller: Dynatec/Fleming/Denaven
Geologist: Bates/Whitmore
Drill Method: Air rotary
Drill Fluid: Air
Land Surface: 4909.43(29)BC (88)BC 4912.10(29)MP (88)MP

Todays Date: 7/12/01
Water Level:
Water Level Date:
Water Level Access:



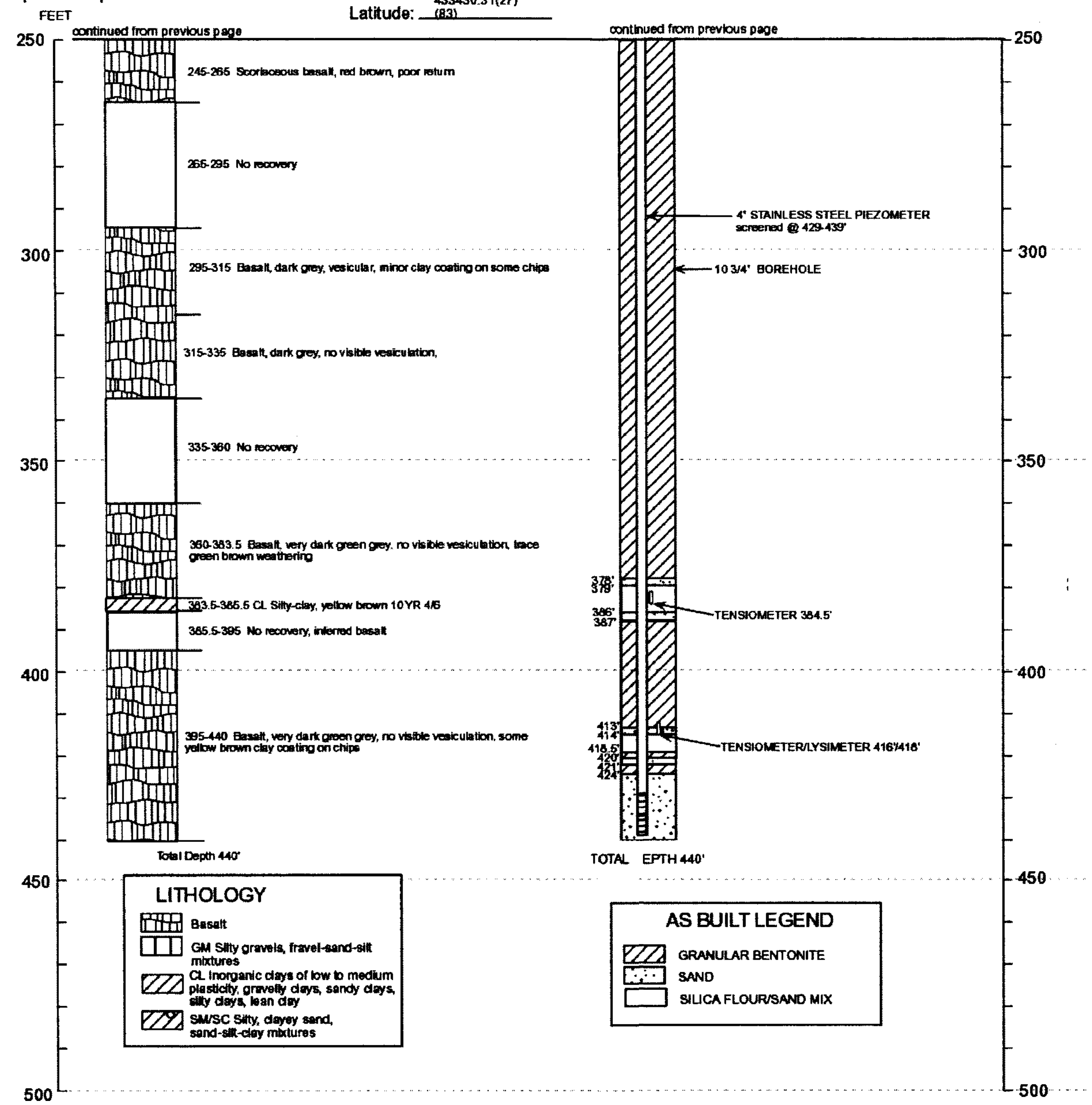
WELL NAME: ICPP-SCI-P-221 PAGE 2
Facility: INTEC
Well Type: Piezometer
Well Status: Active
Year Drilled: 2001
Total Depth: 400'
Start Date: 3/14/01
End Date: 3/26/01
Completion Depth: 395'

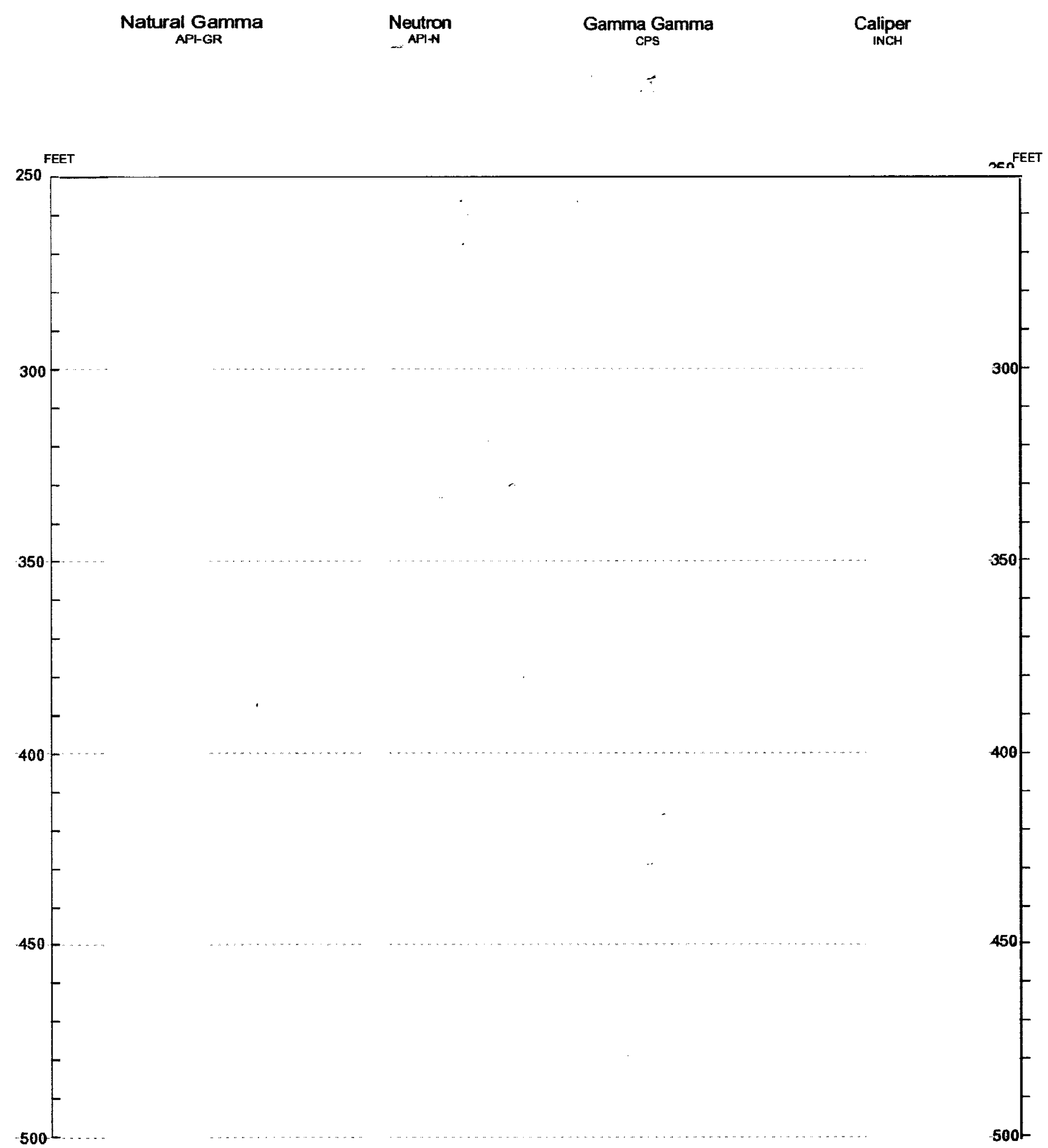
Brass Cap
Easting: 297751.87(27) (83)
Northing: 696412.21(27) (83)
Longitude: 1125547.44(27) (83)
Latitude: 433430.32(27) (83)

Measuring Point
Easting: 297750.47(27) (83)
Northing: 696411.78(27) (83)
Longitude: 1125547.46(27) (83)
Latitude: 433430.31(27) (83)

Driller: Dynatec/Tawater
Geologist: G. Oberhansley
Drill Method: Air rotary
Drill Fluid: Air
.and Surface: 4909.43(29)BC (88)BC 4912.10(29)MP (88)MP

Todays Date: 7/12/01
Water Level:
Water Level Date:
Water Level Access:





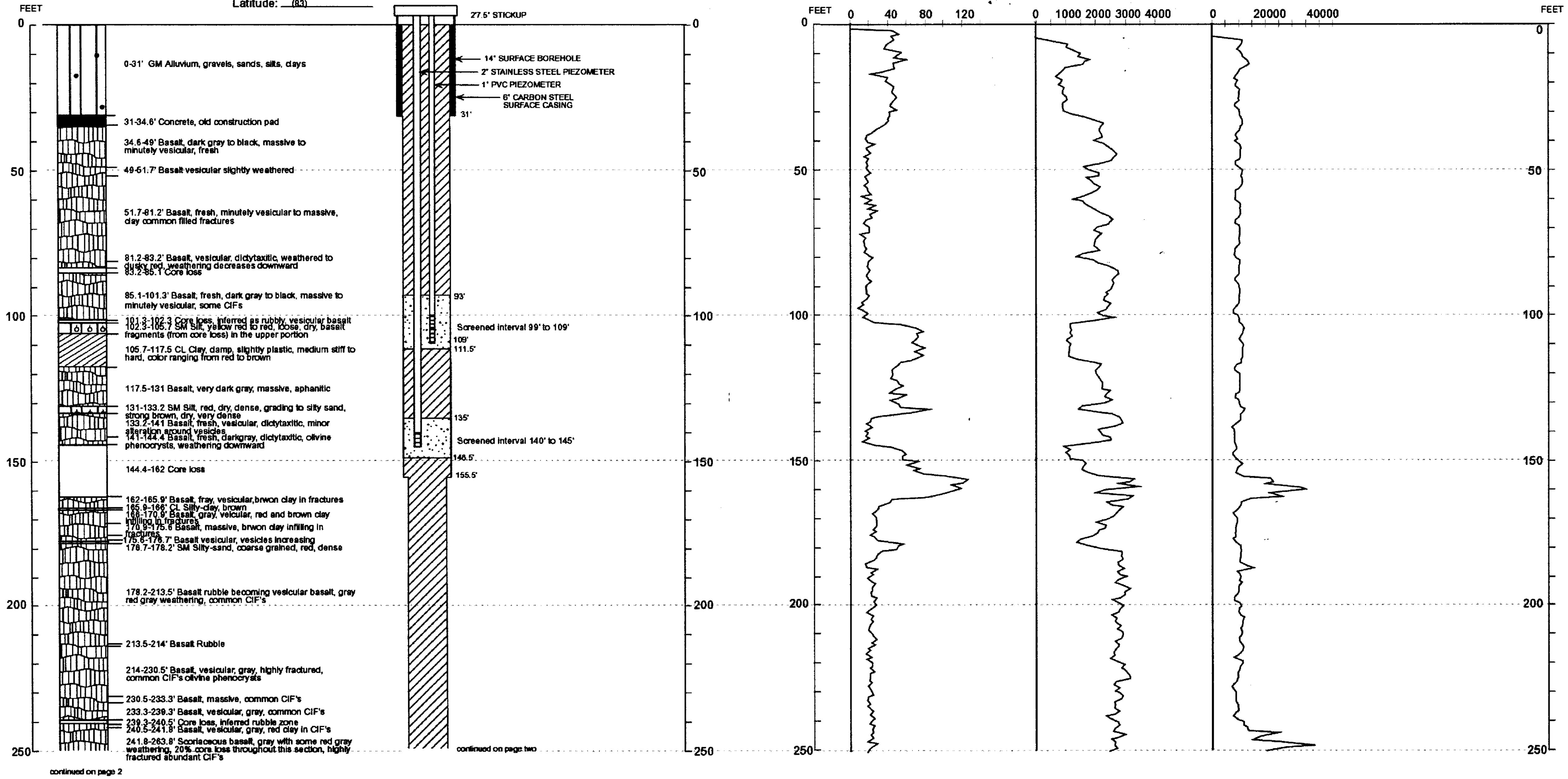
WELL NAME: ICPP-SCI-P-251
Facility: INTEC
Well Type: Piezometer
Well Status: Active
Year Drilled: 2000
Total Depth: 451
Start Date: 11/28/00
End Date: 1/29/01
Completion Depth: 451'

Brass Cap
Easting: 297780.34(27) (83)
Northing: 696380.04(27) (83)
Longitude: 1125547.05(27) (83)
Latitude: 433430.00(27) (83)

Measuring Point
Easting: 297779.44(27) (83)
Northing: 696379.42(27) (83)
Longitude: 1125547.06(27) (83)
Latitude: 433430.00(27) (83)

Driller: Dynatec/Denevan/Horshell
Geologist: C. Martin/E. Whitmore
Drill Method: Air coring
Drill Fluid: Air
Land Surface: 4909.73(29)BC (88)BC 4912.27(29)MP (88)MP

Todays Date: 6/12/01
Water Level:
Water Level Date:
Water Level Access: 1"&2" piezometer



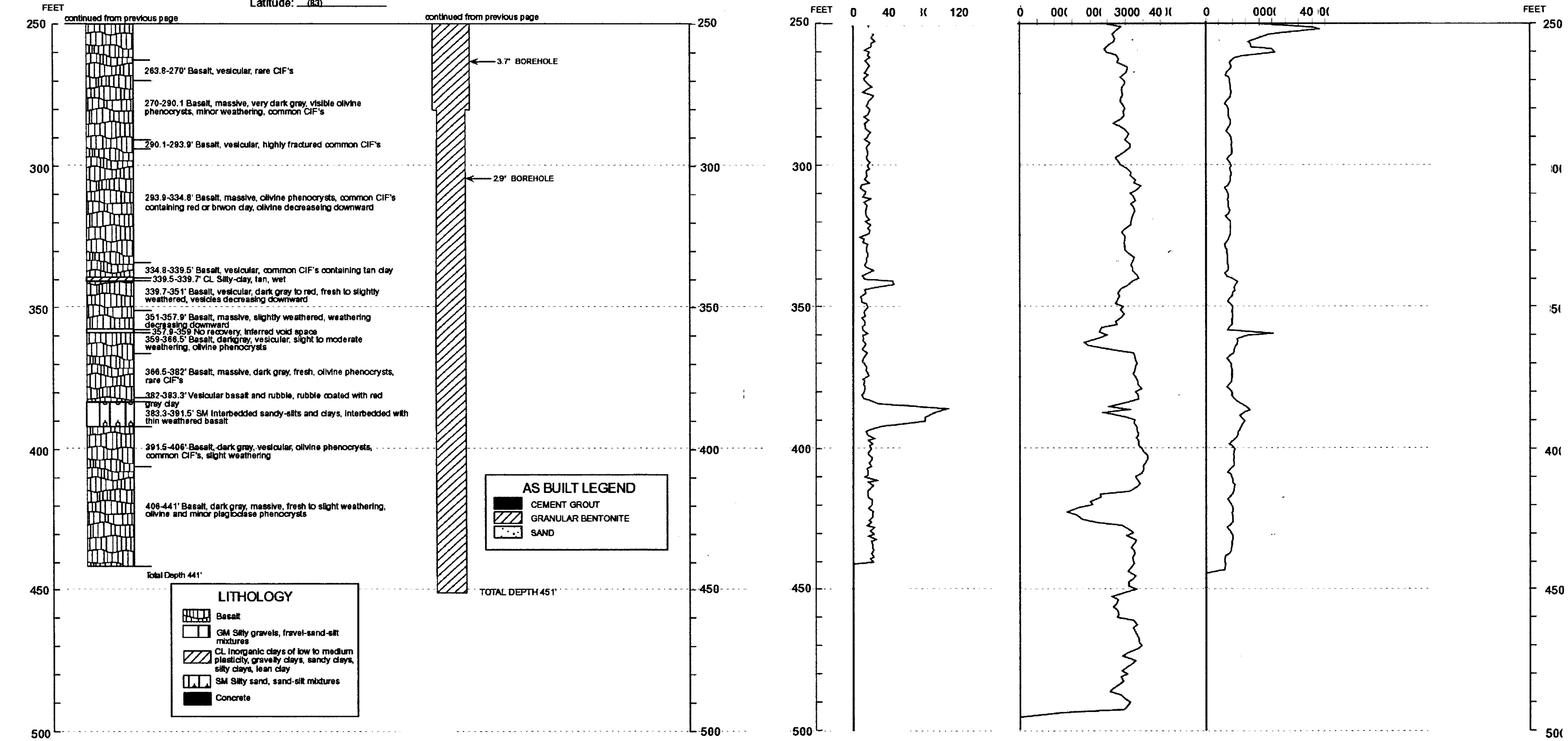
WELL NAME: ICPP-SCI-P-251 PAGE 2
Facility: INTEC
Well Type: Piezometer
Well Status: Active
Year Drilled: 2000
Total Depth: 451
Start Date: 11/28/00
End Date: 1/29/01
Completion Depth: 451'

Brass Cap
Easting: 297780.34(27) (83)
Northing: 696380.04(27) (83)
Longitude: 1125547.05(27) (83)
Latitude: 433430.00(27) (83)

Measuring Point
Easting: 297779.44(27) (83)
Northing: 696379.42(27) (83)
Longitude: 1125547.06(27) (83)
Latitude: 433430.00(27) (83)

Driller: Dynatec/Denevan/Horshell
Geologist: C. Martin/E. Whitmore
Drill Method: Air coring
Drill Fluid: Air
Land Surface: 4909.73(29)BC (88)BC 4912.27(29)MP (88)MP

Todays Date: 6/12/01
Water Level:
Water Level Date:
Water Level Access: 1"&2" piezometer



WELL NAME: **ICPP-SCI-P-222**

Facility: INTEC

Well Type: Instrumentation

Well Status: Active

Year Drilled: 2000

Total Depth: 31.8'

Completion Depth: 31.33'

Brass Cap

Easting: 296832.77(27) (83)

Northing: 692535.30(27) (83)

Longitude: 1125559.44(27) (83)

Latitude: 433351.95(27) (83)

Measuring Point

Easting: 296831.88(27) (83)

Northing: 692534.85(27) (83)

Longitude: 1125559.45(27) (83)

Latitude: 433351.94(27) (83)

Driller: Dynatec/S. Flemming

Geologist: C. Johannesen

Drill Method: Hollow Stem Auger

Drill Fluid: Air

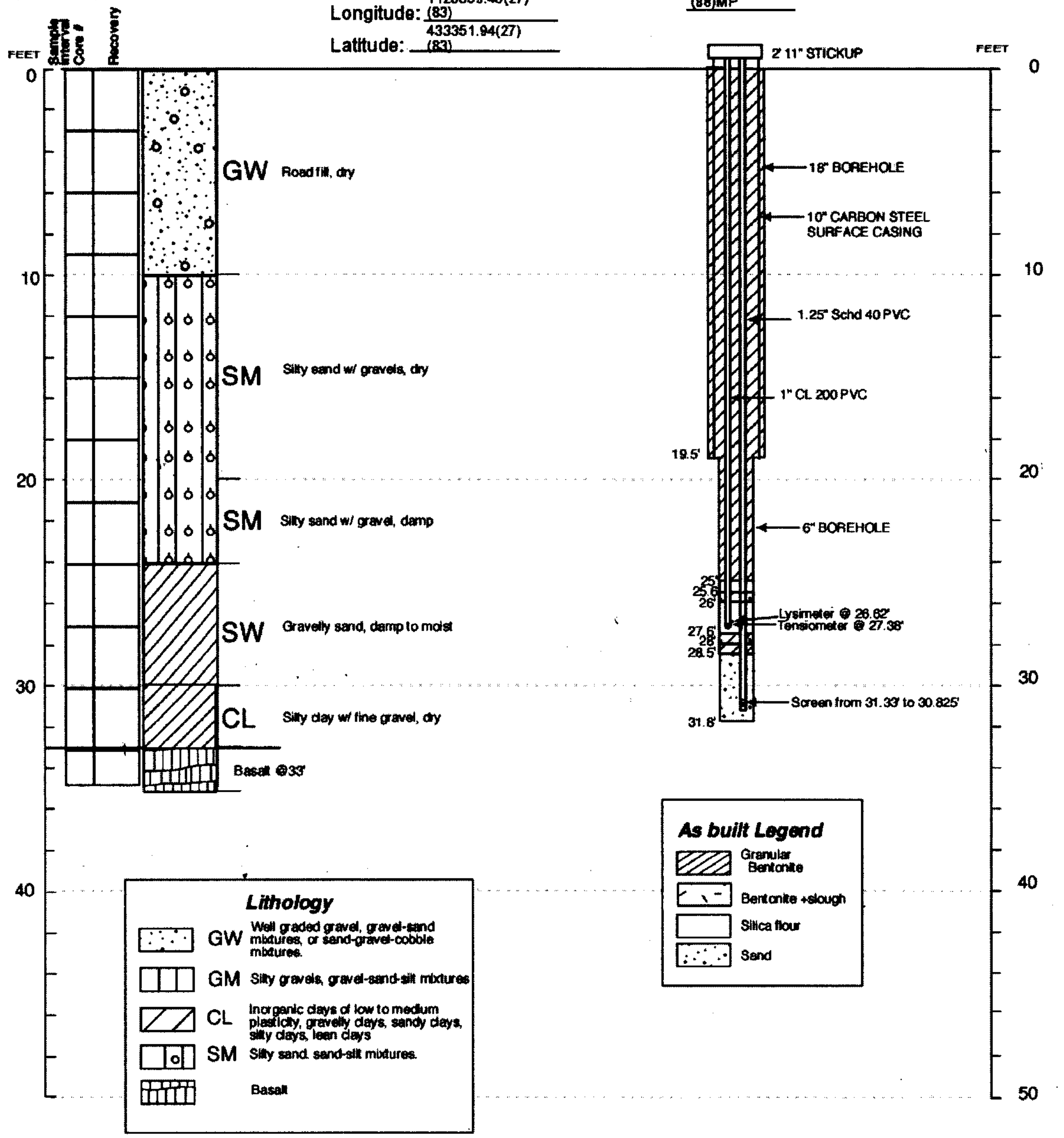
Land Surface: 4916.76(29)BC (88)BC 4919.37(29)MP (88)MP

Date: 6/6/01

Water Level: n/a

Water Level Date:

Water Level Access: 1 1/4 piezo



SM Silty sands, sand-silt mixtures

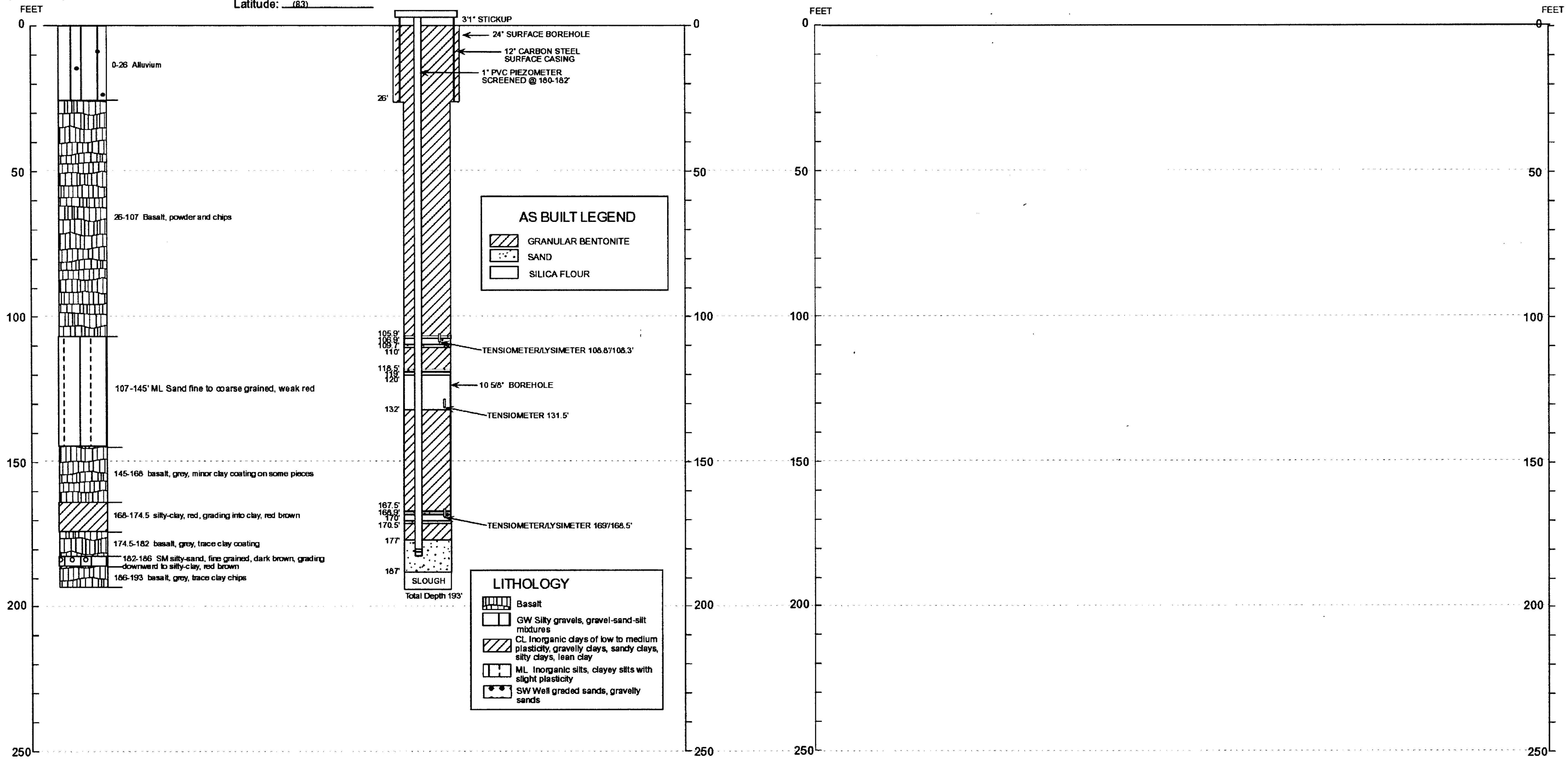
WELL NAME: ICPP-SCI-P-223
Facility: INTEC
Well Type: Piezometer
Well Status: Active
Year Drilled: 2001
Total Depth: 193'
Start Date: 2/16/01
End Date: 2/20/01
Completion Depth: 182'

Brass Cap
Easting: 296990.14(27) (83)
Northing: 692536.87(27) (83)
Longitude: 1125557.30(27) (83)
Latitude: 433351.98(27) (83)

Measuring Point
Easting: 296989.15(27) (83)
Northing: 692536.48(27) (83)
Longitude: 1125557.32(27) (83)
Latitude: 433351.97(27) (83)

Driller: Dynatec/Horshell
Geologist: E. Whitmore/Hall
Drill Method: Air rotary
Drill Fluid: Air
Land Surface: 4917.04(29)BC (88)BC 4919.79(29)MP (88)MP

Todays Date: 7/27/01
Water Level:
Water Level Date:
Water Level Access: 1" piezometer



WELL NAME: ICPP-SCI-P-224
Facility: INTEC
Well Type: Instrumented-piezometer
Well Status: Active
Year Drilled: 2001
Total Depth: 398'
Start Date: 3/7/01
End Date: 3/14/01
Completion Depth: 398'

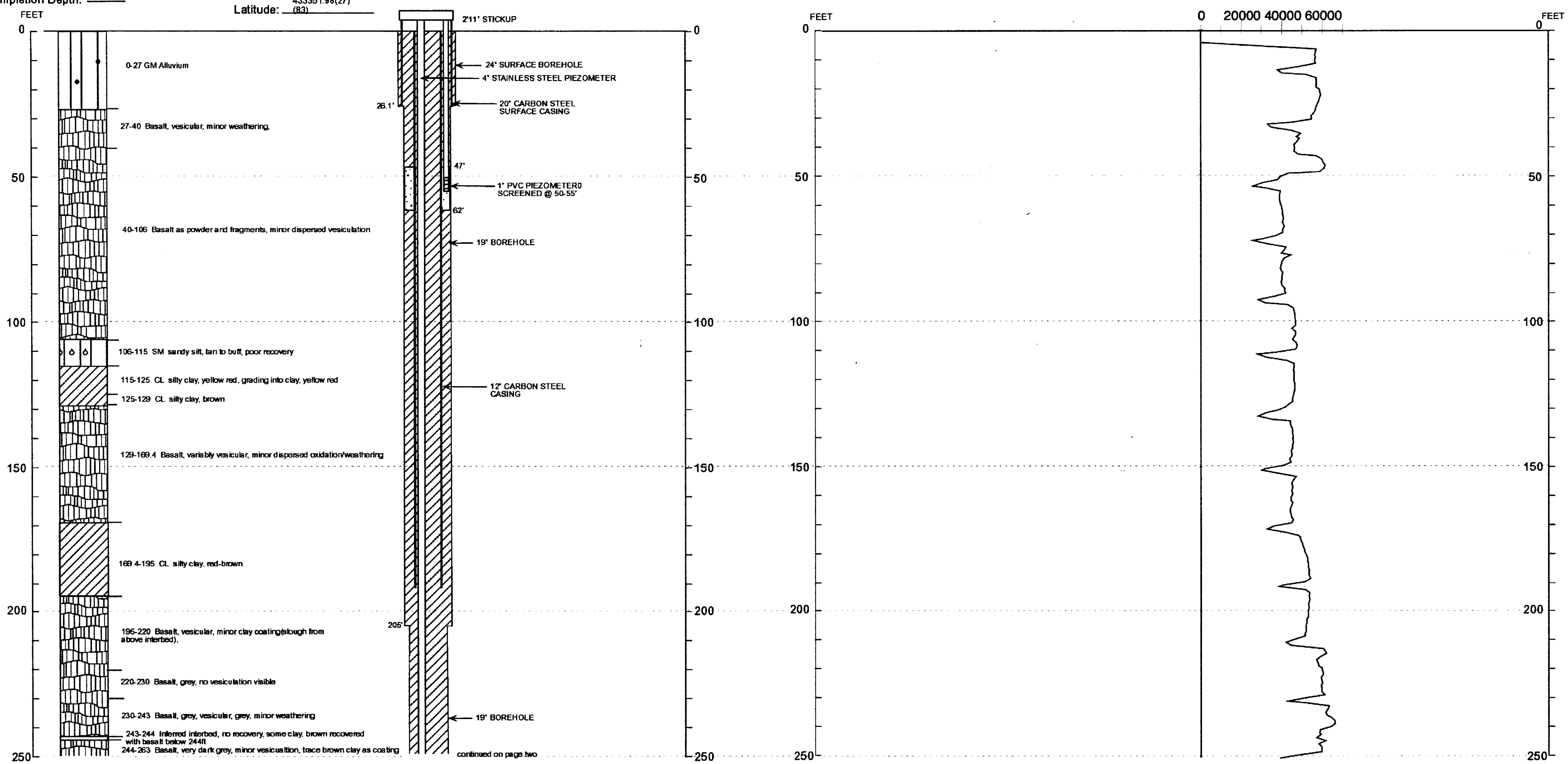
Brass Cap
Easting: 296958.74(27) (83)
Northing: 692538.54(27) (83)
Longitude: 1125557.73(27) (83)
Latitude: 433351.99(27) (83)

Measuring Point
Easting: 296957.64(27) (83)
Northing: 692537.78(27) (83)
Longitude: 1125557.74(27) (83)
Latitude: 433351.98(27) (83)

Driller: Dynatec/Denevan/Horshell
Geologist: Whitmore/Bates
Drill Method: Air rotary
Drill Fluid: Air
Land Surface: 4917.06(29)BC (88)BC 4918.72(29)MP (88)MP

Todays Date: 7/9/01
Water Level:
Water Level Date:
Water Level Access:

Natural Gamma API-GR
Neutron API-N
Gamma Gamma CPS
Caliper INCH



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continued on page two

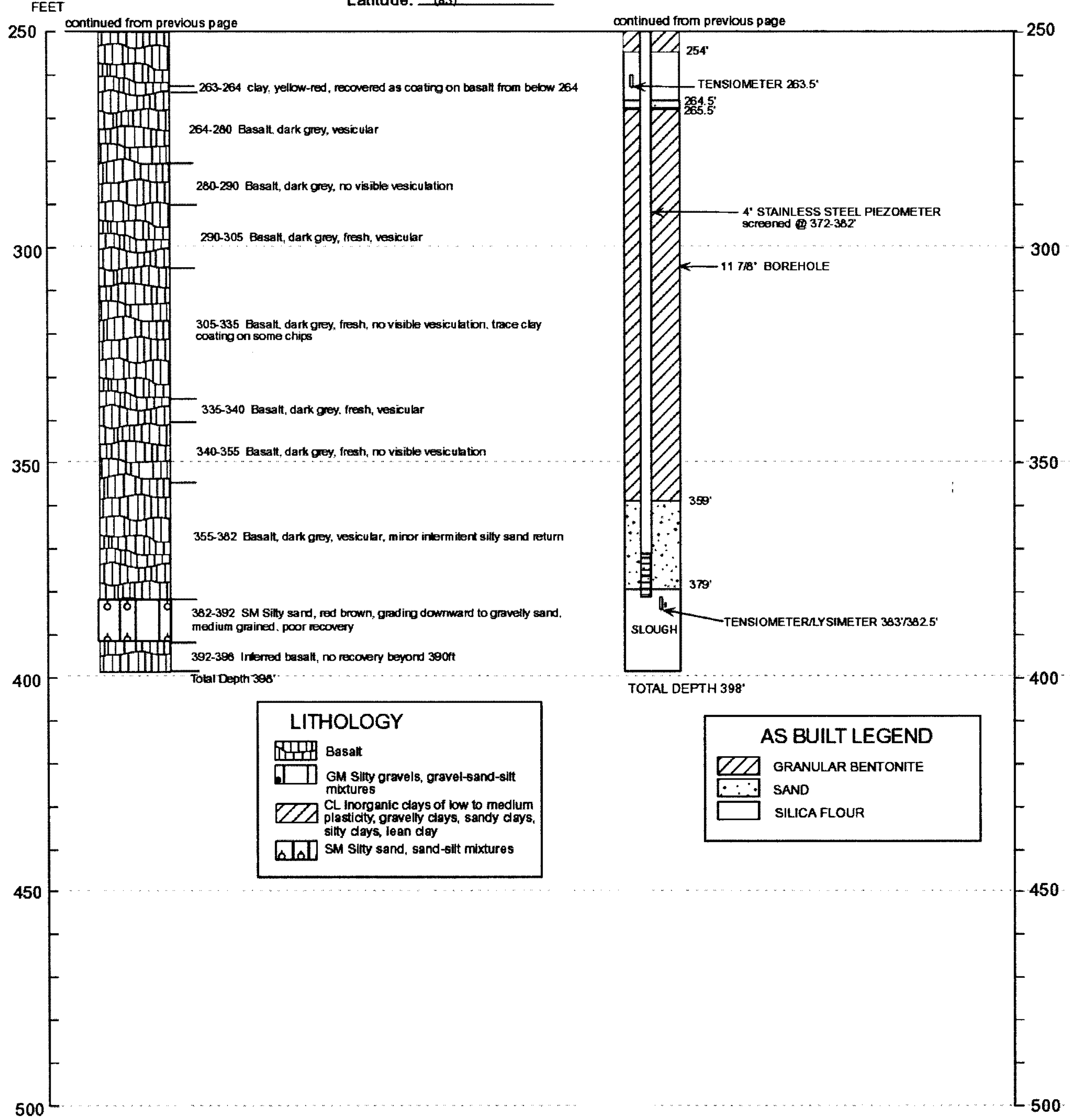
WELL NAME: ICPP-SCI-P-224 PAGE 2
Facility: INTEC
Well Type: Piezometer
Well Status: Active
Year Drilled: 2001
Total Depth: 398'
Start Date: 3/7/01
End Date: 3/14/01
Completion Depth: 398'

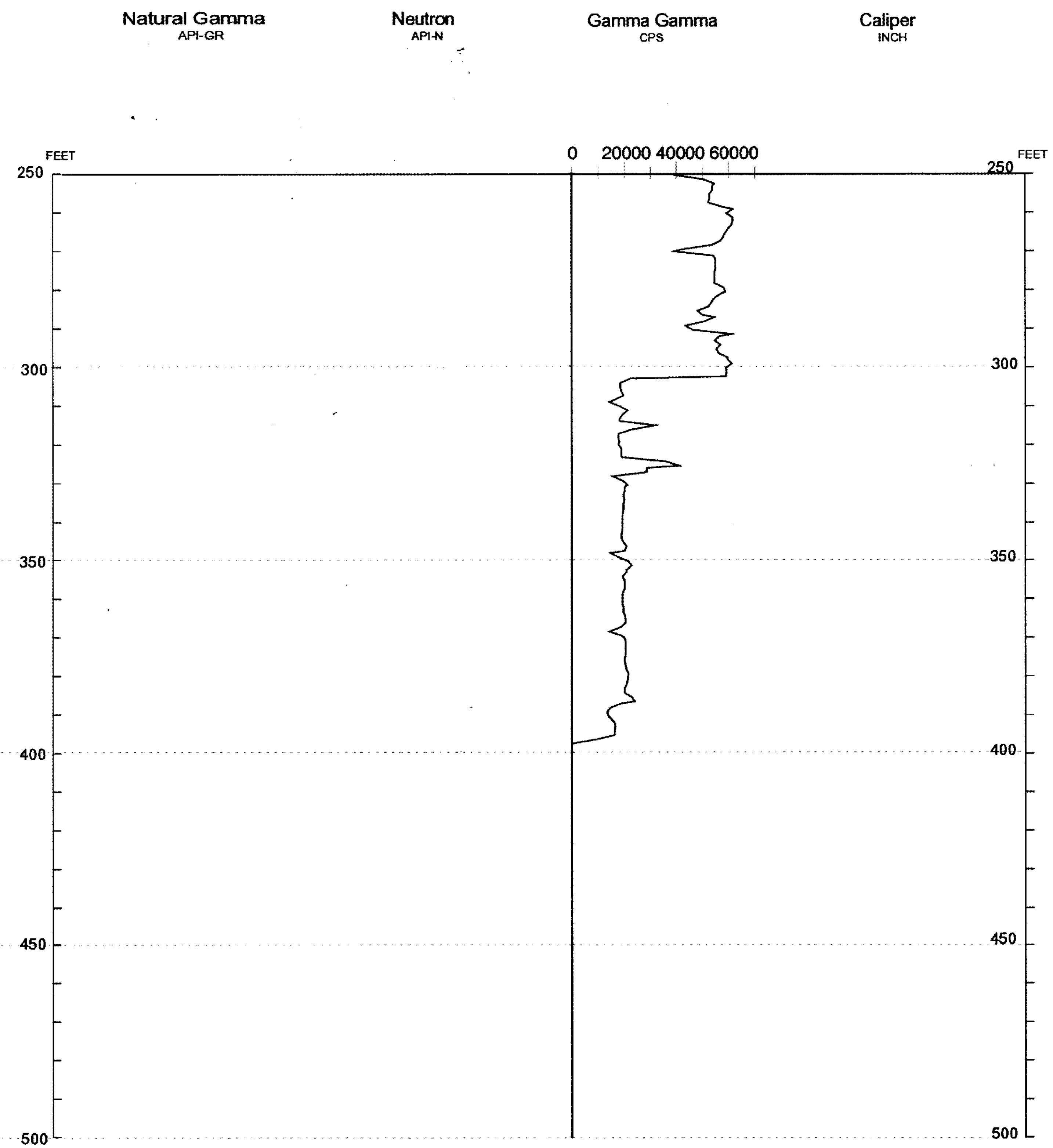
Brass Cap
Easting: 296958.74(27) (83)
Northing: 692538.54(27) (83)
Longitude: 1125557.73(27) (83)
Latitude: 433351.99(27) (83)

Measuring Point
Easting: 296957.64(27) (83)
Northing: 692537.78(27) (83)
Longitude: 1125557.74(27) (83)
Latitude: 433351.98(27) (83)

Driller: Dynatec/Denevan/Horshell
Geologist: Whitmore/Bates
Drill Method: Air rotary
Drill Fluid: Air
Land Surface: 4917.06(29)BC (88)BC 4918.72(29)MP (88)MP

Todays Date: 7/9/01
Water Level:
Water Level Date:
Water Level Access:





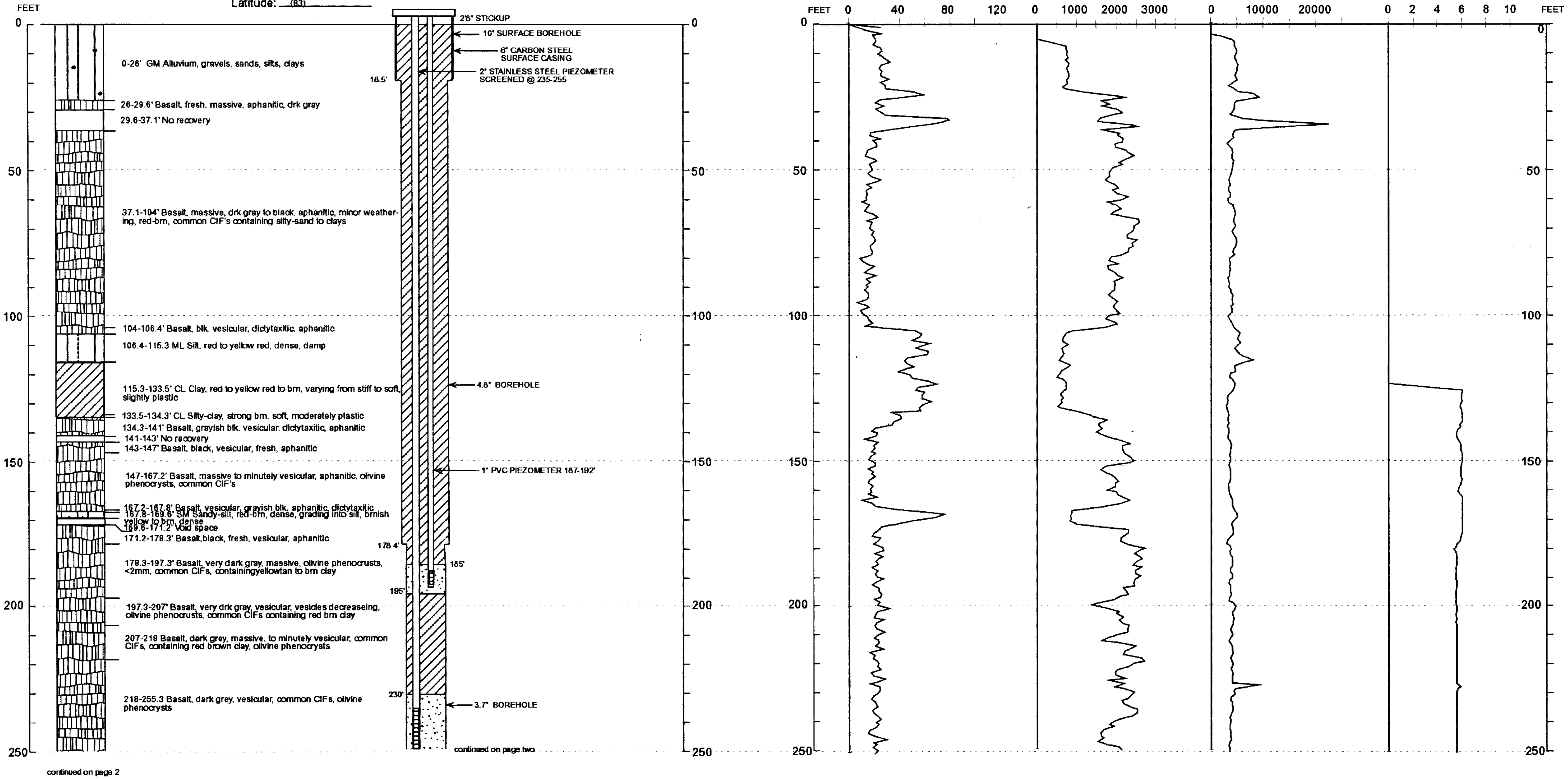
WELL NAME: ICPP-SCI-P-250
Facility: INTEC
Well Type: Piezometer
Well Status: Active
Year Drilled: 2000
Total Depth: 414.8'
Start Date: 12/14/00
End Date: 2/8/01
Completion Depth: 259'

Brass Cap
Easting: 297025.79(27) (83)
Northing: 692537.23(27) (83)
Longitude: 1125556.82(27) (83)
Latitude: 433351.98(27) (83)

Measuring Point
Easting: 297024.81(27) (83)
Northing: 692536.57(27) (83)
Longitude: 1125556.83(27) (83)
Latitude: 433351.98(27) (83)

Driller: Dynatec/Denevan/Horshell
Geologist: C. Martin/E. Whitmore
Drill Method: Air coring
Drill Fluid: Air
Land Surface: 4916.59(29)BC (88)BC 4919.06(29)MP (88)MP

Todays Date: 6/12/01
Water Level:
Water Level Date:
Water Level Access: 1"&2" piezometer



WELL NAME: **ICPP-SCI-P-250 PAGE 2**

Facility: INTEC

Well Type: Piezometer

Well Status: Active

Year Drilled: 2000

Total Depth: 451

Start Date: 11/28/00

End Date: 1/29/01

Completion Depth: 451'

Brass Cap

Easting: 297025.79(27) (83)

Northing: 692537.23(27) (83)

Longitude: 1125556.82(27) (83)

Latitude: 433351.98(27) (83)

Measuring Point

Easting: 297024.81(27) (83)

Northing: 692536.57(27) (83)

Longitude: 1125556.83(27) (83)

Latitude: 433351.98(27) (83)

Driller: Dynatec/Denevan/Horshell

Geologist: C. Martin/E. Whitmore

Drill Method: Air coring

Drill Fluid: Air

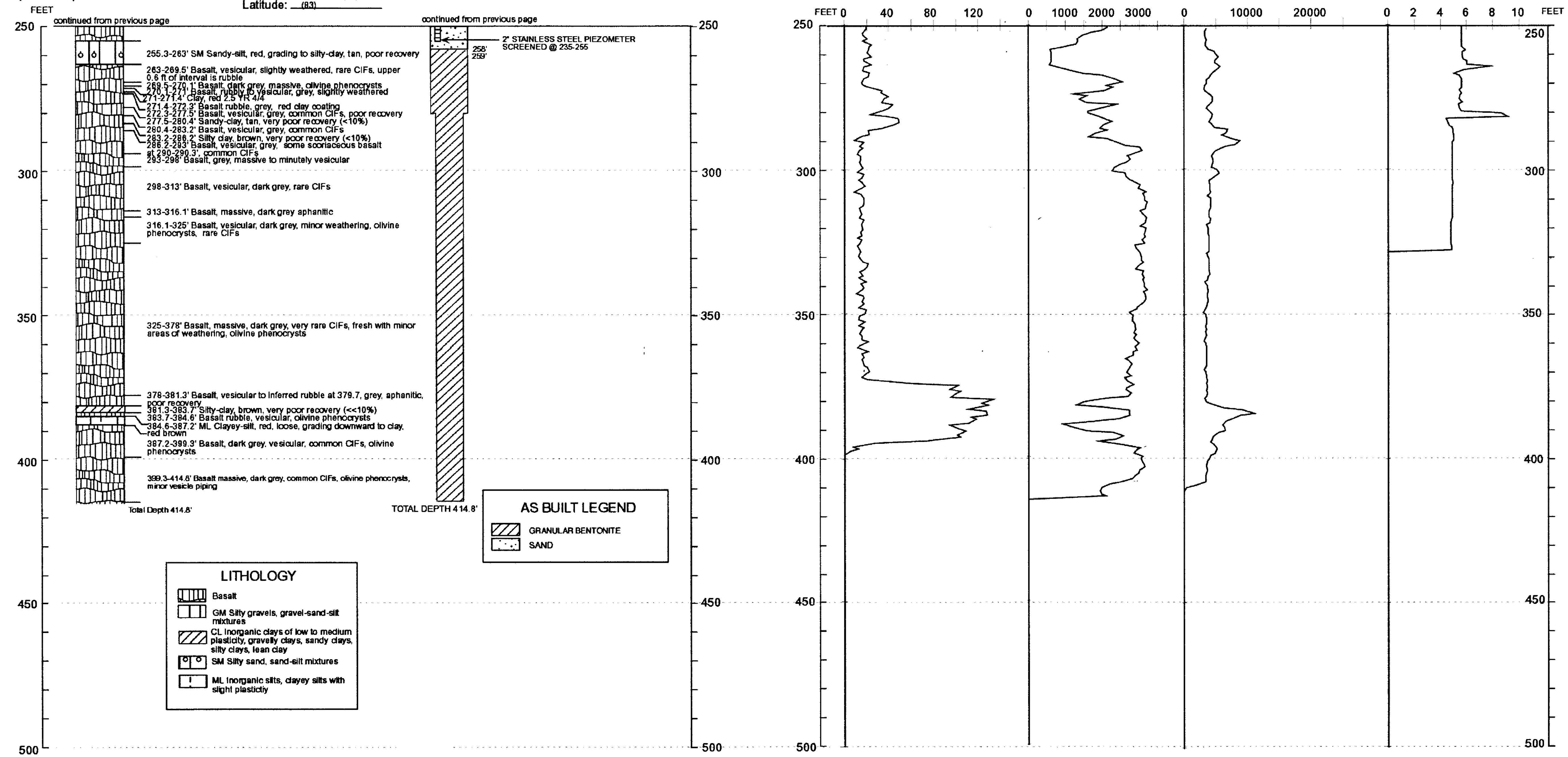
Land Surface: 4916.59(29)BC (88)BC 4919.06(29)MP (88)MP

Todays Date: 6/12/01

Water Level:

Water Level Date:

Water Level Access: 1"&2" piezometer



Brass Cap

Easting: 298940.52(27) (83)

Northing: 694353.62(27) (83)

Longitude: 1125558.20(27) (83)

Latitude: 433409.91(27) (83)

Measuring Point

Easting: 298940.07(27) (83)

Northing: 694352.03(27) (83)

Longitude: 1125558.21(27) (83)

Latitude: 433409.90(27) (83)

WELL NAME: **ICPP-SCI-P-247**

Facility: INTEC

Well Type: Instrumentation

Well Status: Active

Year Drilled: 2000

Total Depth: 46.5'

Completion Depth: 46'

Driller: Dynatec/S. Flemming

Geologist: C. Johannesen

Drill Method: Hollow Stem Auger

Drill Fluid: Air

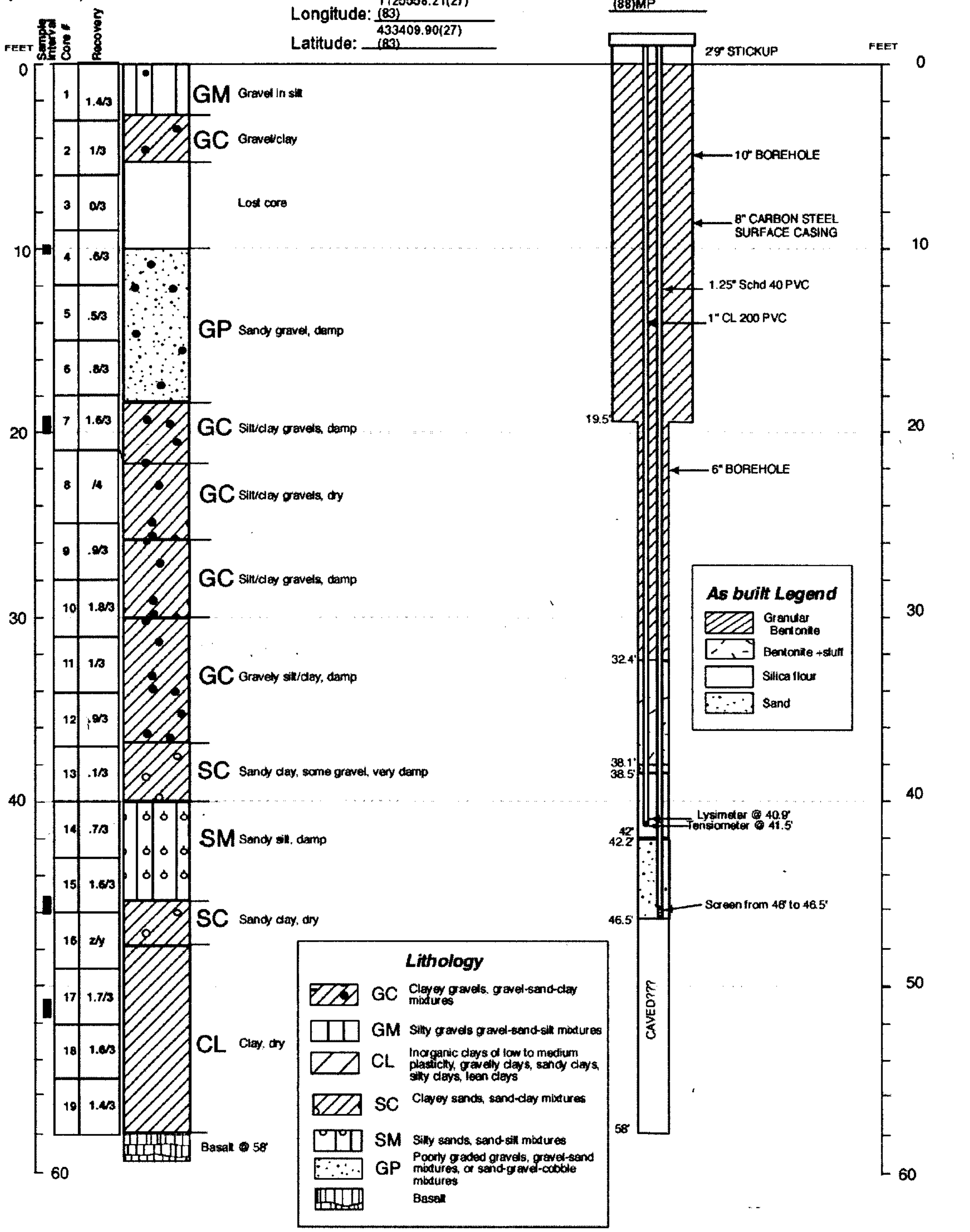
Land Surface: 4914.48(29)BC (88)BC 4916.93(29)MP (88)MP

Date: 6/6/01

Water Level: n/a

Water Level Date:

Water Level Access: 1 1/4 piezo



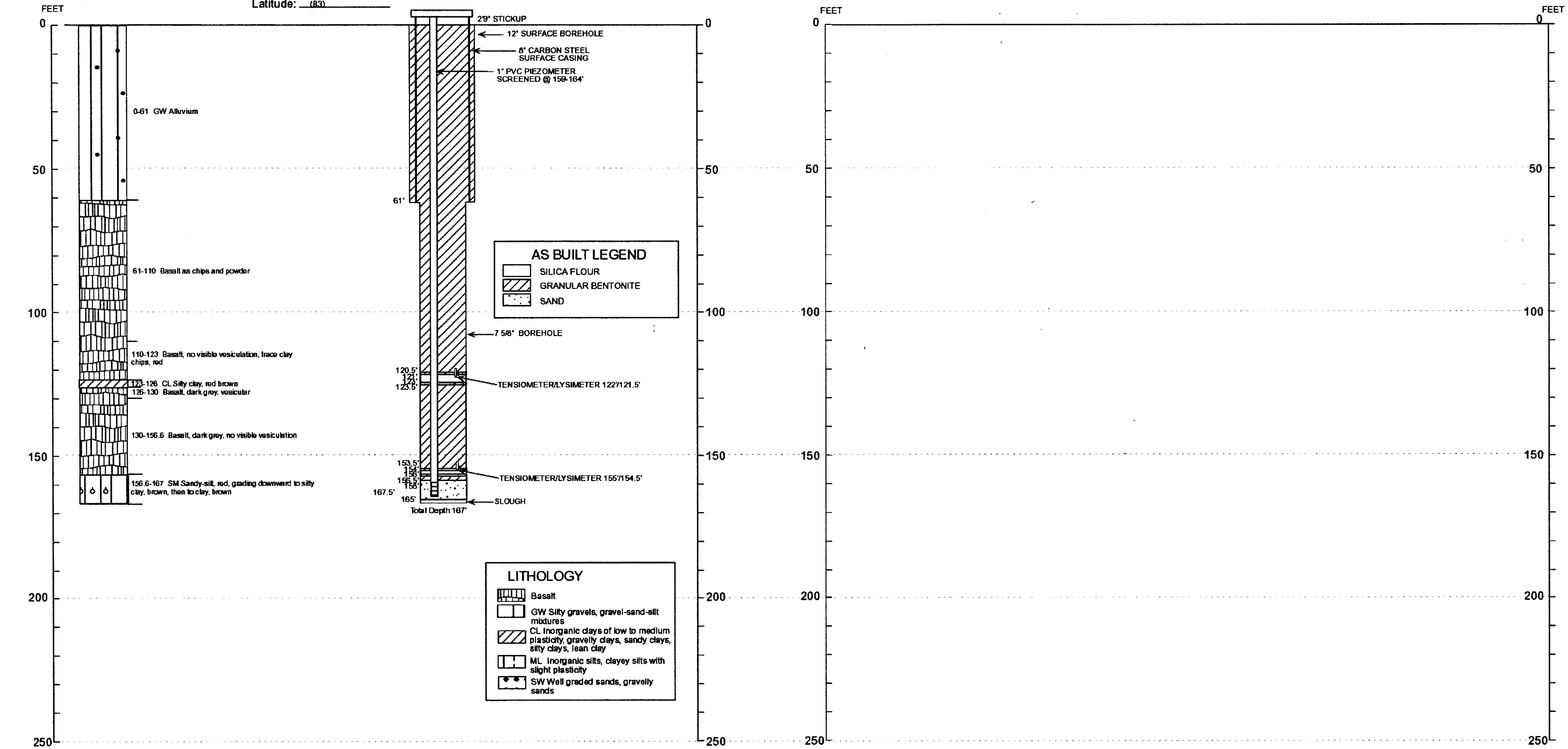
WELL NAME: ICPP-SCI-P-225
Facility: INTEC
Well Type: Piezometer
Well Status: Active
Year Drilled: 2001
Total Depth: 167'
Start Date: 2/13/01
End Date: 2/27/01
Completion Depth: 164'

Brass Cap
Easting: 296919.28(27) (83)
Northing: 694337.63(27) (83)
Longitude: 1125558.49(27) (83)
Latitude: 433409.75(27) (83)

Measuring Point
Easting: 296918.07(27) (83)
Northing: 694336.72(27) (83)
Longitude: 1125558.51(27) (83)
Latitude: 433409.74(27) (83)

Driller: Dynatec/Horshell
Geologist: E. Whitmore/Hall
Drill Method: Air rotary
Drill Fluid: Air
Land Surface: 4914.46(29)BC (88)BC 4916.89(29)MP (88)MP

Todays Date: 7/27/01
Water Level:
Water Level Date:
Water Level Access: 1" piezometer



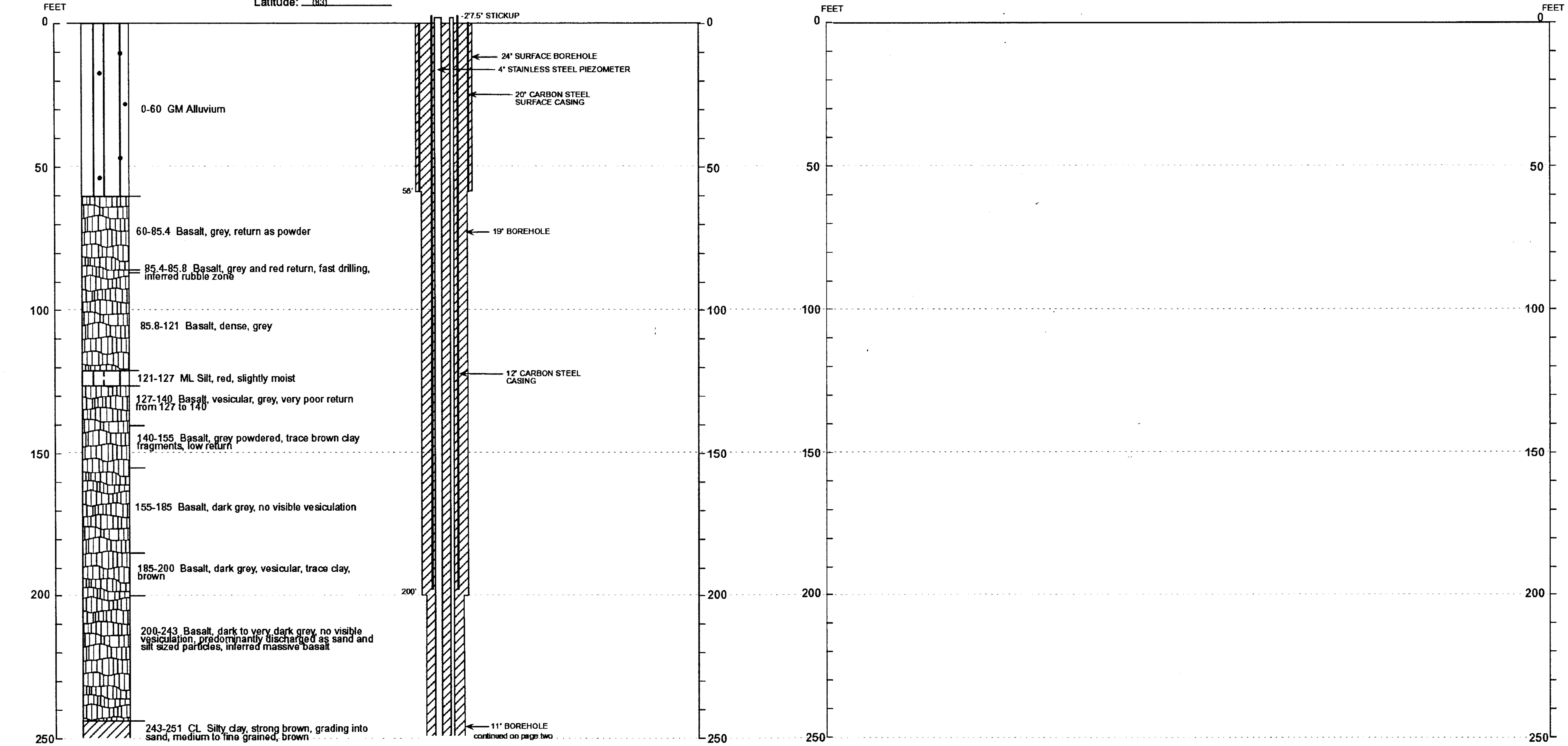
WELL NAME: ICPP-SCI-P-226
Facility: INTEC
Well Type: Instrumented-piezometer
Well Status: Active
Year Drilled: 2001
Total Depth: 405'
Start Date: 3/16/01
End Date: 3/21/01
Completion Depth: 383'

Brass Cap
Easting: 296942.09(27) (83)
Northing: 694385.14(27) (83)
Longitude: 1125558.19(27) (83)
Latitude: 433410.22(27) (83)

Measuring Point
Easting: 296941.31(27) (83)
Northing: 694384.77(27) (83)
Longitude: 1125558.20(27) (83)
Latitude: 433410.22(27) (83)

Driller: Dynatec/Fleming/Denaven
Geologist: Matzen/Whitmore/Bates
Drill Method: Air rotary
Drill Fluid: Air
Land Surface: 4914.54(29)BC (88)BC 4916.80(29)MP (88)MP

Todays Date: 7/17/01
Water Level:
Water Level Date:
Water Level Access:



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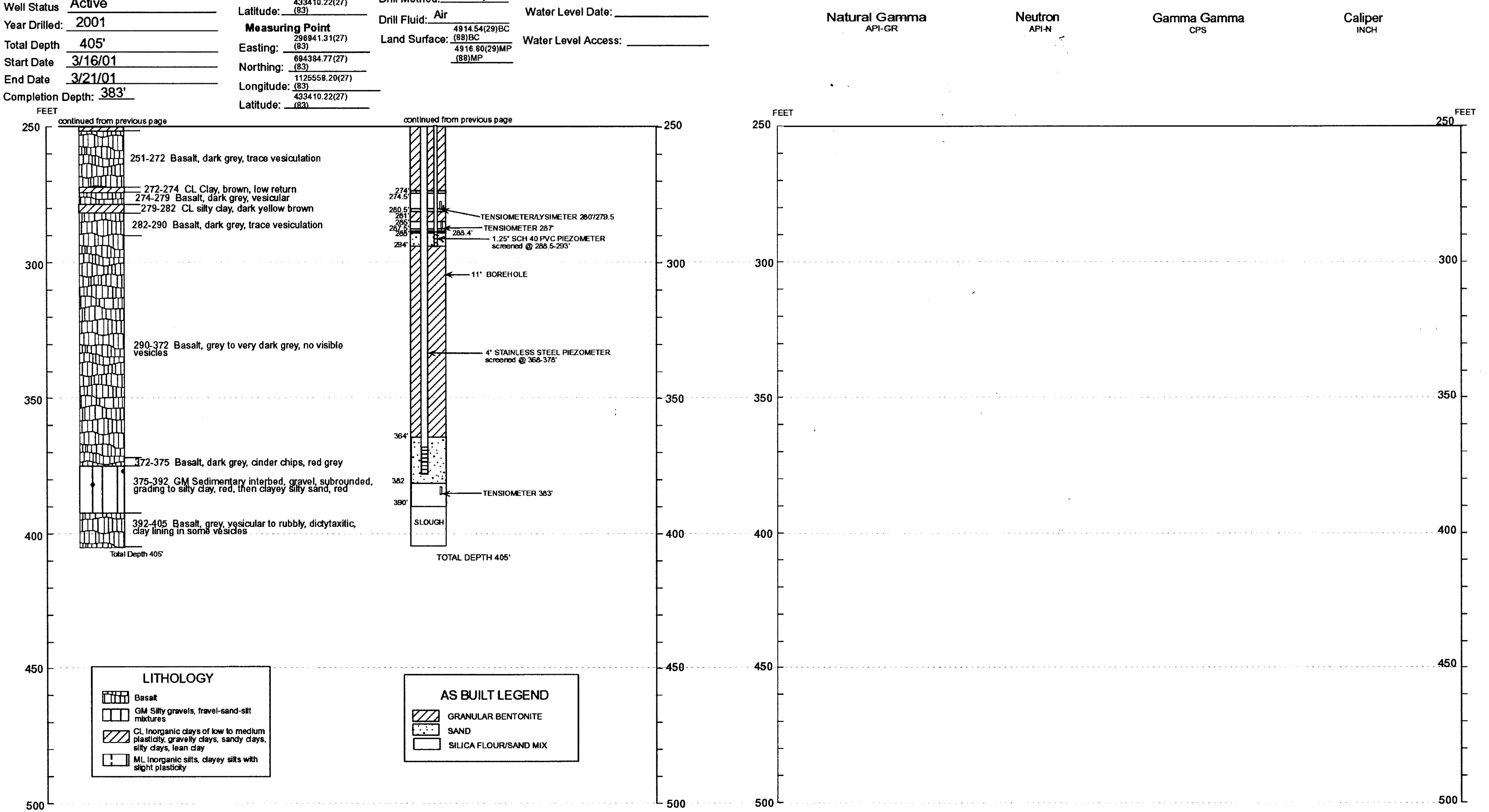
WELL NAME: **ICPP-SCI-P-226 PAGE 2**
Facility: INTEC
Well Type: Piezometer
Well Status: Active
Year Drilled: 2001
Total Depth: 405'
Start Date: 3/16/01
End Date: 3/21/01
Completion Depth: 383'

Brass Cap
Easting: 296942.09(27) (83)
Northing: 694385.14(27) (83)
Longitude: 1125558.19(27) (83)
Latitude: 433410.22(27) (83)

Measuring Point
Easting: 296941.31(27) (83)
Northing: 694384.77(27) (83)
Longitude: 1125558.20(27) (83)
Latitude: 433410.22(27) (83)

Driller: Dynatec/Tawater
Geologist: G. Oberhansley
Drill Method: Air rotary
Drill Fluid: Air
Land Surface: 4914.54(29)BC (88)BC 4916.80(29)MP (88)MP

Todays Date: 7/12/01
Water Level:
Water Level Date:
Water Level Access:



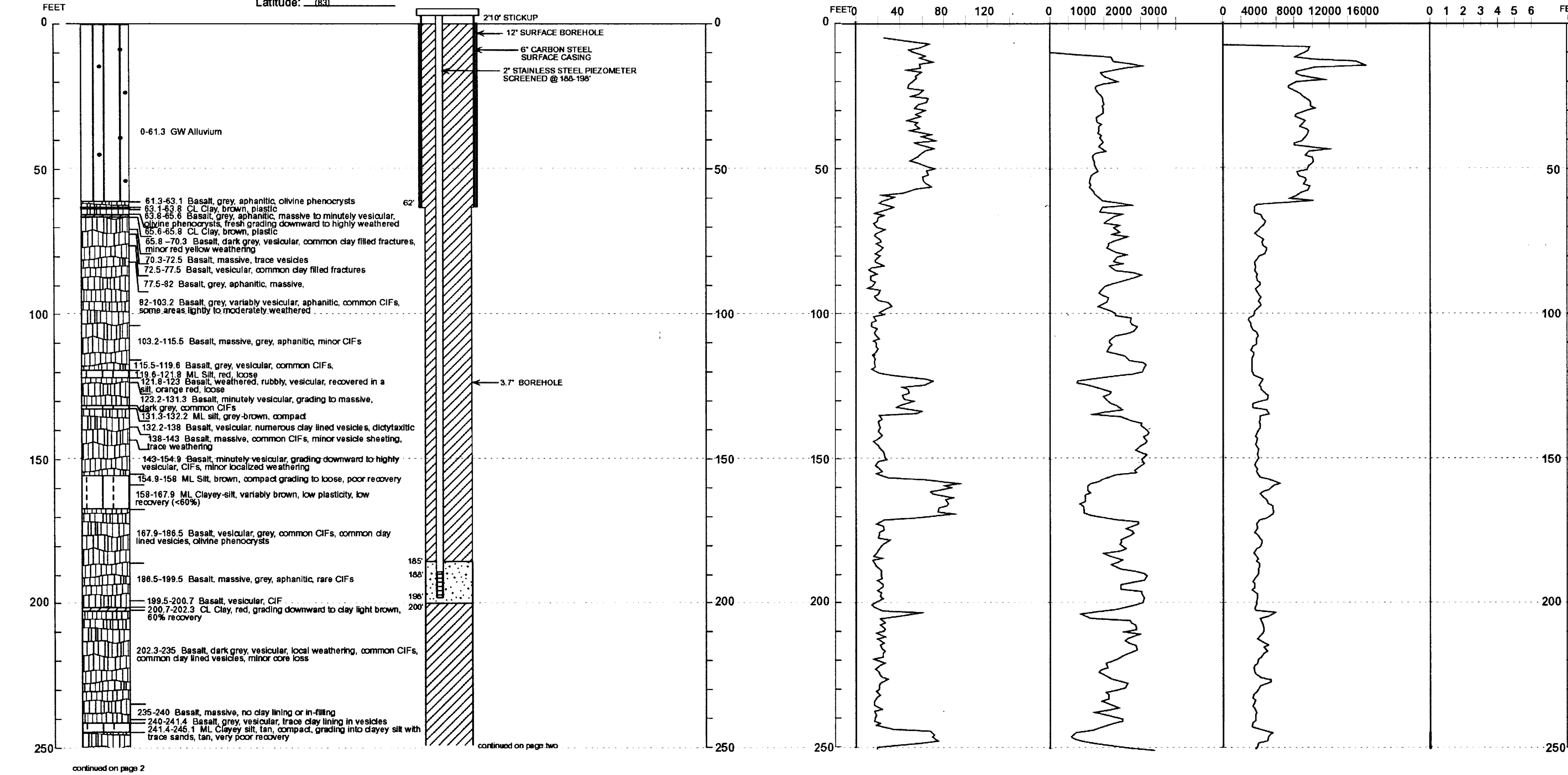
WELL NAME: ICPP-SCI-P-249
Facility: INTEC
Well Type: Piezometer
Well Status: Active
Year Drilled: 2001
Total Depth: 402'
Start Date: 1/4/01
End Date: 1/19/01
Completion Depth: 198.5'

Brass Cap
Easting: 296938.79(27) (83)
Northing: 694325.31(27) (83)
Longitude: 1125558.22(27) (83)
Latitude: 433409.63(27) (83)

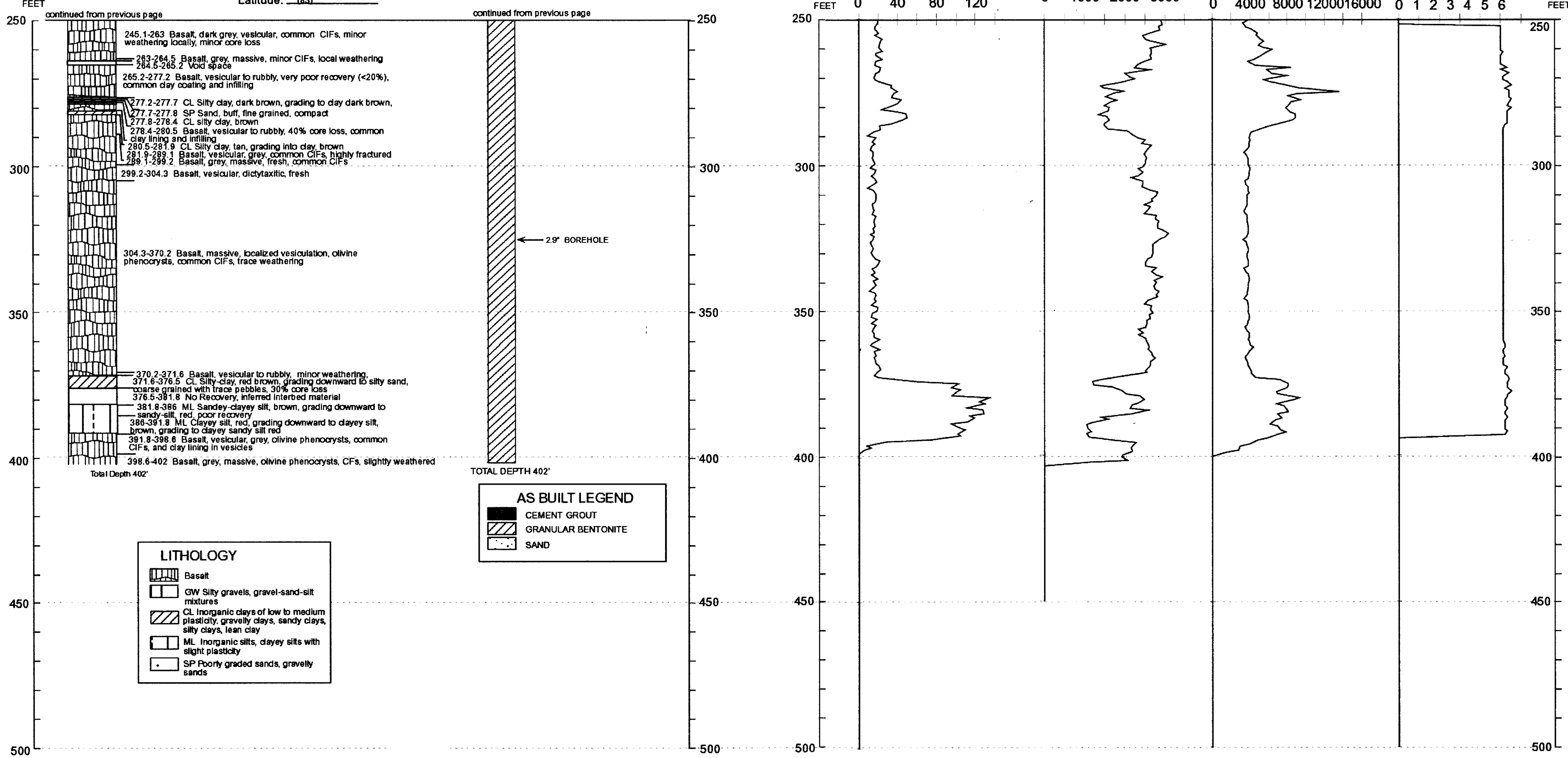
Measuring Point
Easting: 296938.37(27) (83)
Northing: 694324.62(27) (83)
Longitude: 1125558.23(27) (83)
Latitude: 433409.63(27) (83)

Driller: Dynatec/Horshell
Geologist: T. Matzen/E. Whitmore
Drill Method: Air coring
Drill Fluid: Air
Land Surface: 4914.48(29)BC (88)BC 4917.00(29)MP (88)MP

Todays Date: 7/18/01
Water Level:
Water Level Date:
Water Level Access: 2" piezometer



WELL NAME: ICPP-SCI-P-249 PAGE 2	**Brass Cap**		Driller: Dynatec/Horshell	Todays Date: 7/18/01	
Facility: INTEC	Easting:	296938.79(27) (83)	Geologist: T. Matzen/E. Whitmore	Water Level:	
Well Type: Piezometer	Northing:	694325.31(27) (83)	Drill Method: Air coring	Water Level Date:	
Well Status: Active	Longitude:	1125558.22(27) (83)	Drill Fluid: Air	Water Level Access: 2" piezometer	
Year Drilled: 2001	Latitude:	433409.63(27) (83)	Land Surface: 4914.48(29)BC (88)BC 4917.00(29)MP (88)MP		
Total Depth: 402'	**Measuring Point**				
Start Date: 1/4/01	Easting:	296938.37(27) (83)			
End Date: 1/19/01	Northing:	694324.62(27) (83)			
Completion Depth: 198.5'	Longitude:	1125558.23(27) (83)			
	Latitude:	433409.63(27) (83)			



WELL NAME: **ICPP-SCI-P-227**

Facility: INTEC

Well Type: Instrumentation

Well Status: Active

Year Drilled: 2001

Total Depth: 39'

Completion Depth: 39'

Brass Cap

Easting: 296898.63(27) (83)

Northing: 696122.36(27) (83)

Longitude: 1125559.00(27) (83)

Latitude: 433427.38(27) (83)

Measuring Point

Easting: 296897.37(27) (83)

Northing: 696122.28(27) (83)

Longitude: 1125559.01(27) (83)

Latitude: 433427.38(27) (83)

Driller: Dynatec/S. Flemming

Geologist: C. Johannesen

Drill Method: Hollow Stem Auger

Drill Fluid: Air

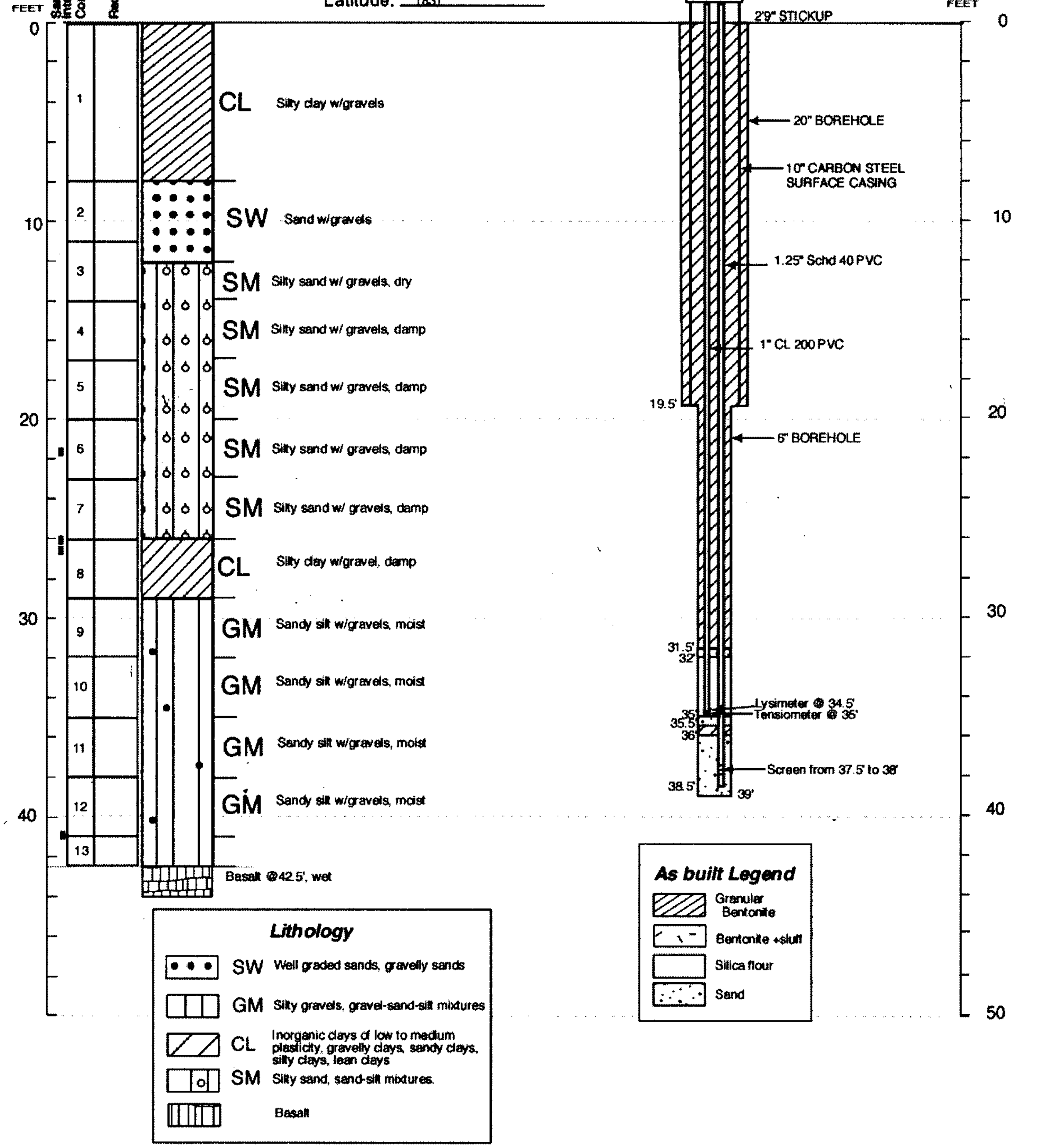
Land Surface: 4912.43(29)BC (88)BC 4914.89(29)MP (88)MP

Date: 6/6/01

Water Level: n/a

Water Level Date:

Water Level Access: 1 1/4 piezo



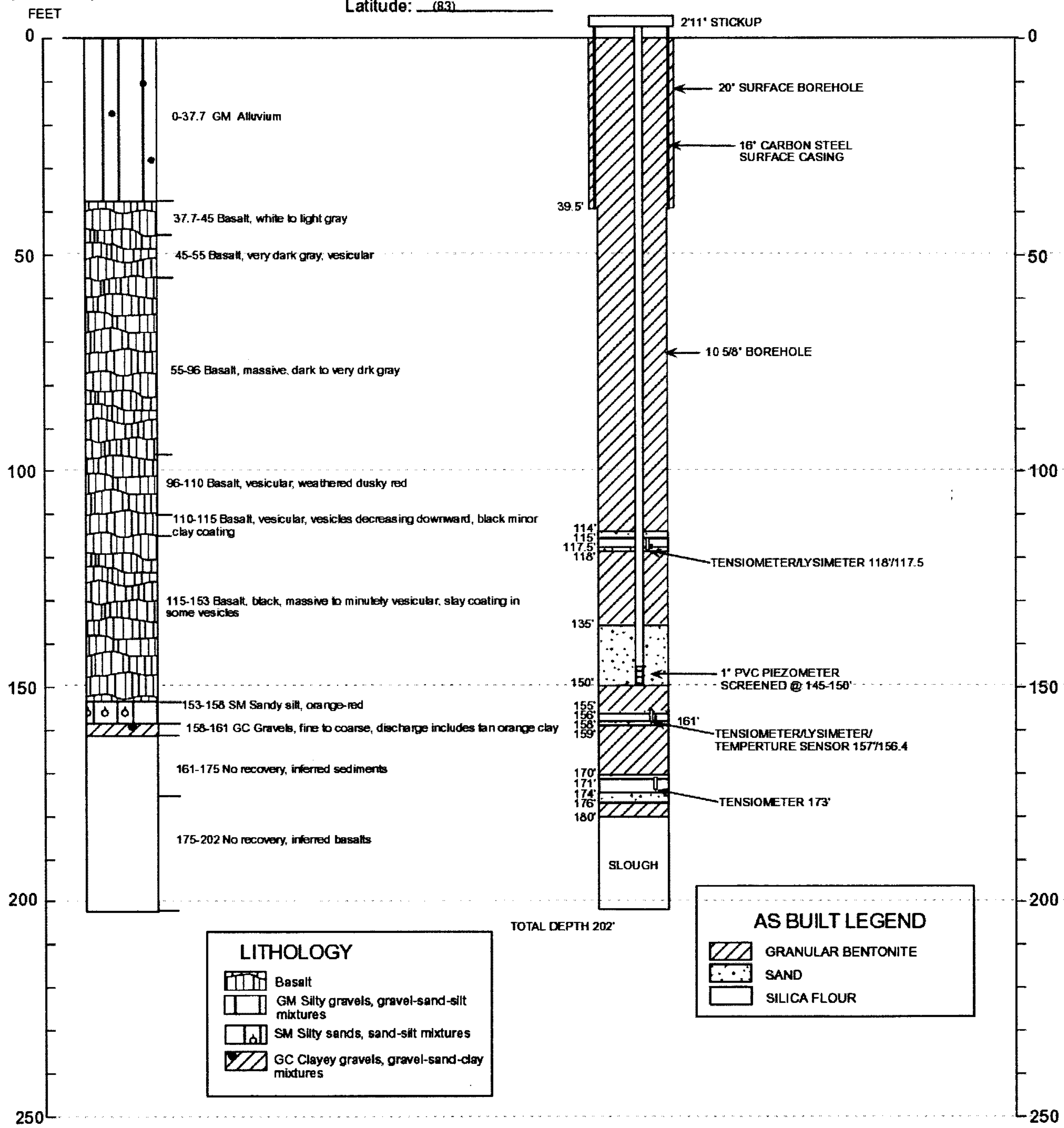
WELL NAME: ICPP-SCI-P-228
Facility: INTEC
Well Type: Instrumented-piezometer
Well Status: Active
Year Drilled: 2001
Total Depth: 202'
Start Date: 3/21/01
End Date: 3/21/01
Completion Depth: 173'

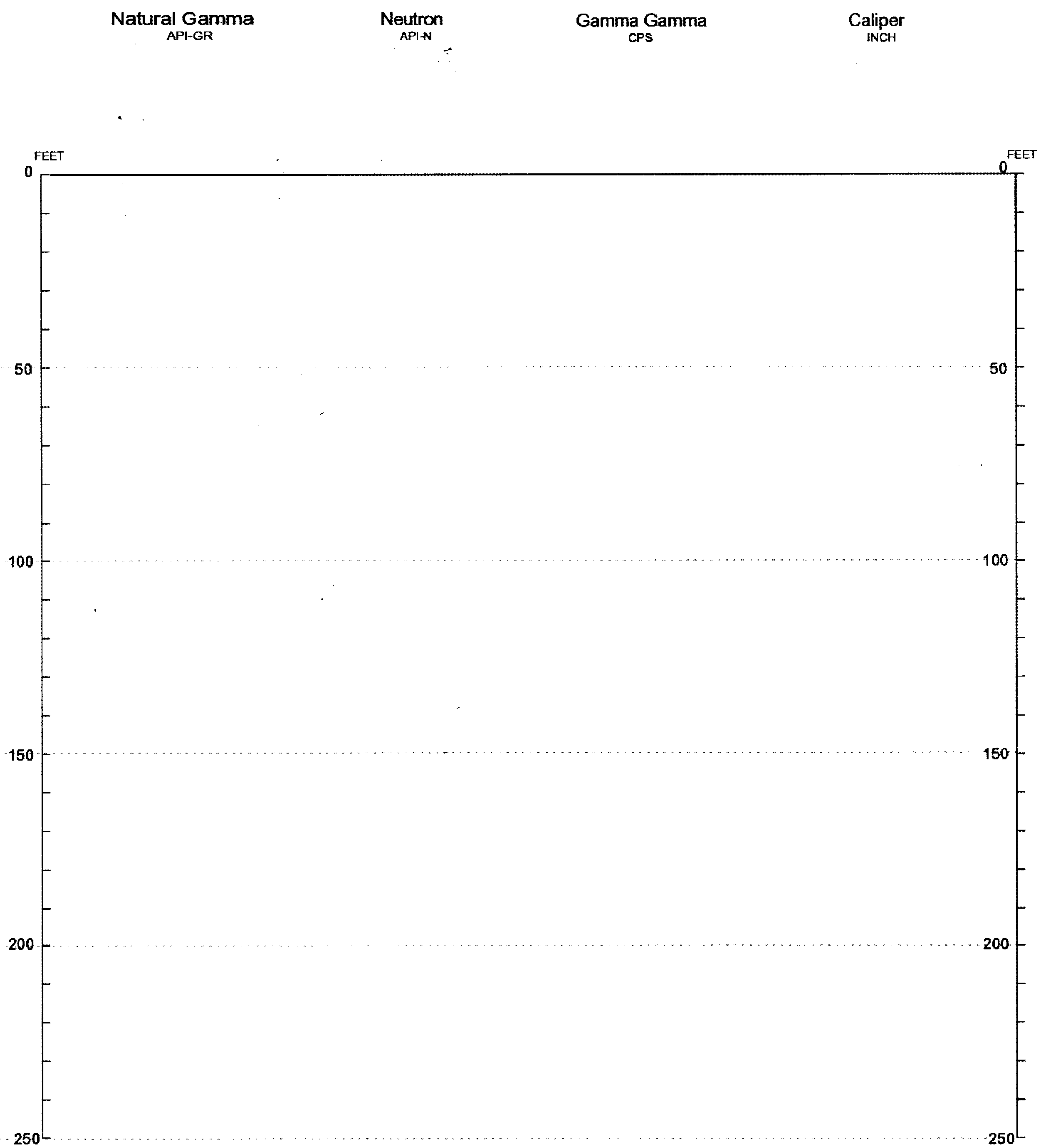
Brass Cap
Easting: 296951.23(27) (83)
Northing: 696123.30(27) (83)
Longitude: 1125558.28(27) (83)
Latitude: 433427.39(27) (83)

Measuring Point
Easting: 296950.11(27) (83)
Northing: 696123.10(27) (83)
Longitude: 1125558.29(27) (83)
Latitude: 433427.39(27) (83)

Driller: Dynatec/Rosario/Jensen
Geologist: Hall/Johannesen
Drill Method: Air rotary
Drill Fluid: Air
Land Surface: 4912.22(29)BC (88)BC 4914.80(29)MP (88)MP

Todays Date: 7/16/01
Water Level:
Water Level Date:
Water Level Access:





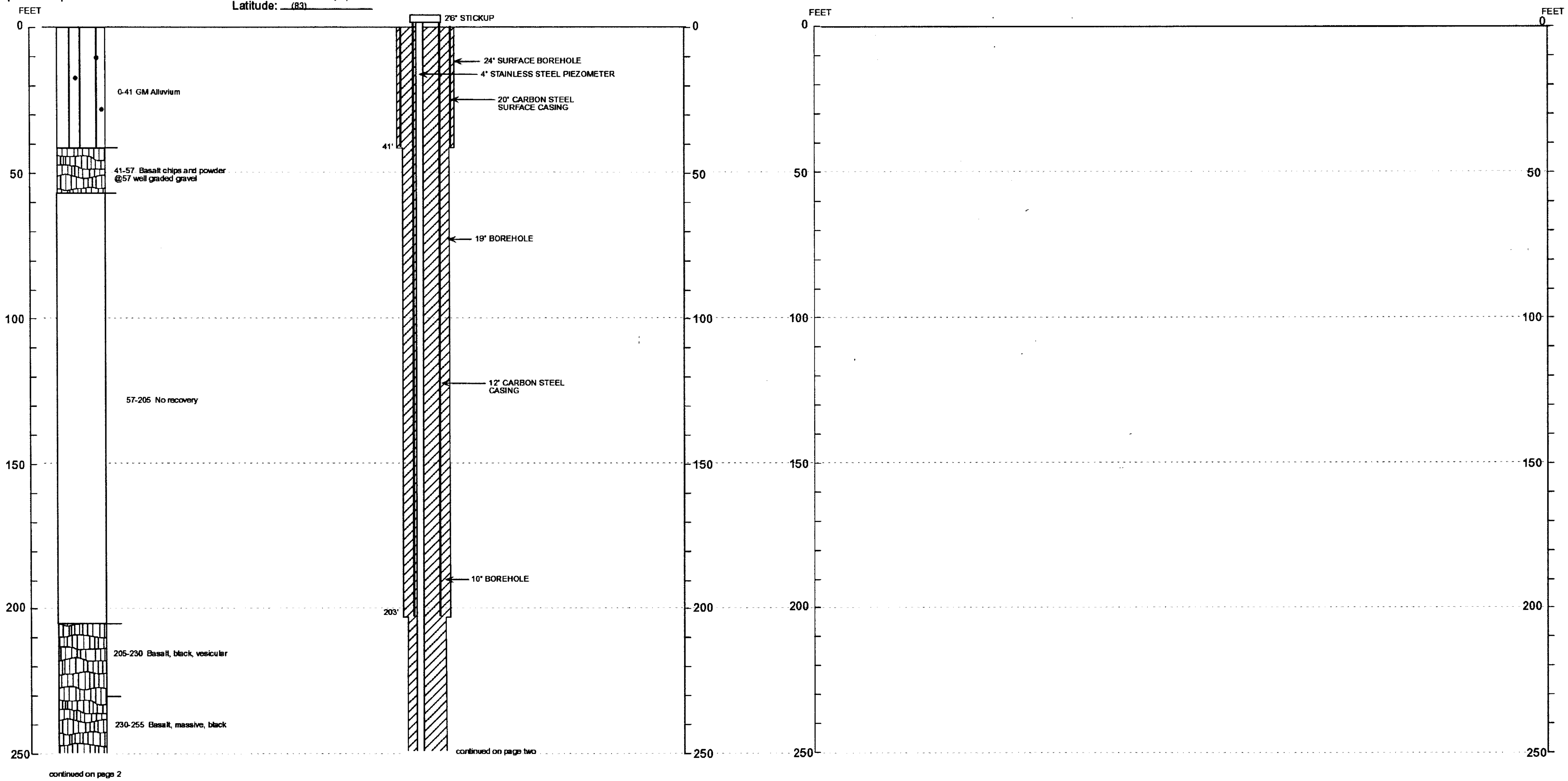
WELL NAME: ICPP-SCI-P-229
Facility: INTEC
Well Type: Instrumented-piezometer
Well Status: Active
Year Drilled: 2001
Total Depth: 398'
Start Date: 3/22/01
End Date: 3/28/01
Completion Depth: 389'

Brass Cap
Easting: 296871.53(27) (83)
Northing: 696121.27(27) (83)
Longitude: 1125559.36(27) (83)
Latitude: 433427.36(27) (83)

Measuring Point
Easting: 296870.22(27) (83)
Northing: 696120.65(27) (83)
Longitude: 1125559.38(27) (83)
Latitude: 433427.36(27) (83)

Driller: Dynatec/Rosario/Jensen
Geologist: Bates/Johannesen/Hall
Drill Method: Air rotary
Drill Fluid: Air
Land Surface: 4912.43(29)BC (88)BC 4914.61(29)MP (88)MP

Todays Date: 7/13/01
Water Level:
Water Level Date:
Water Level Access:



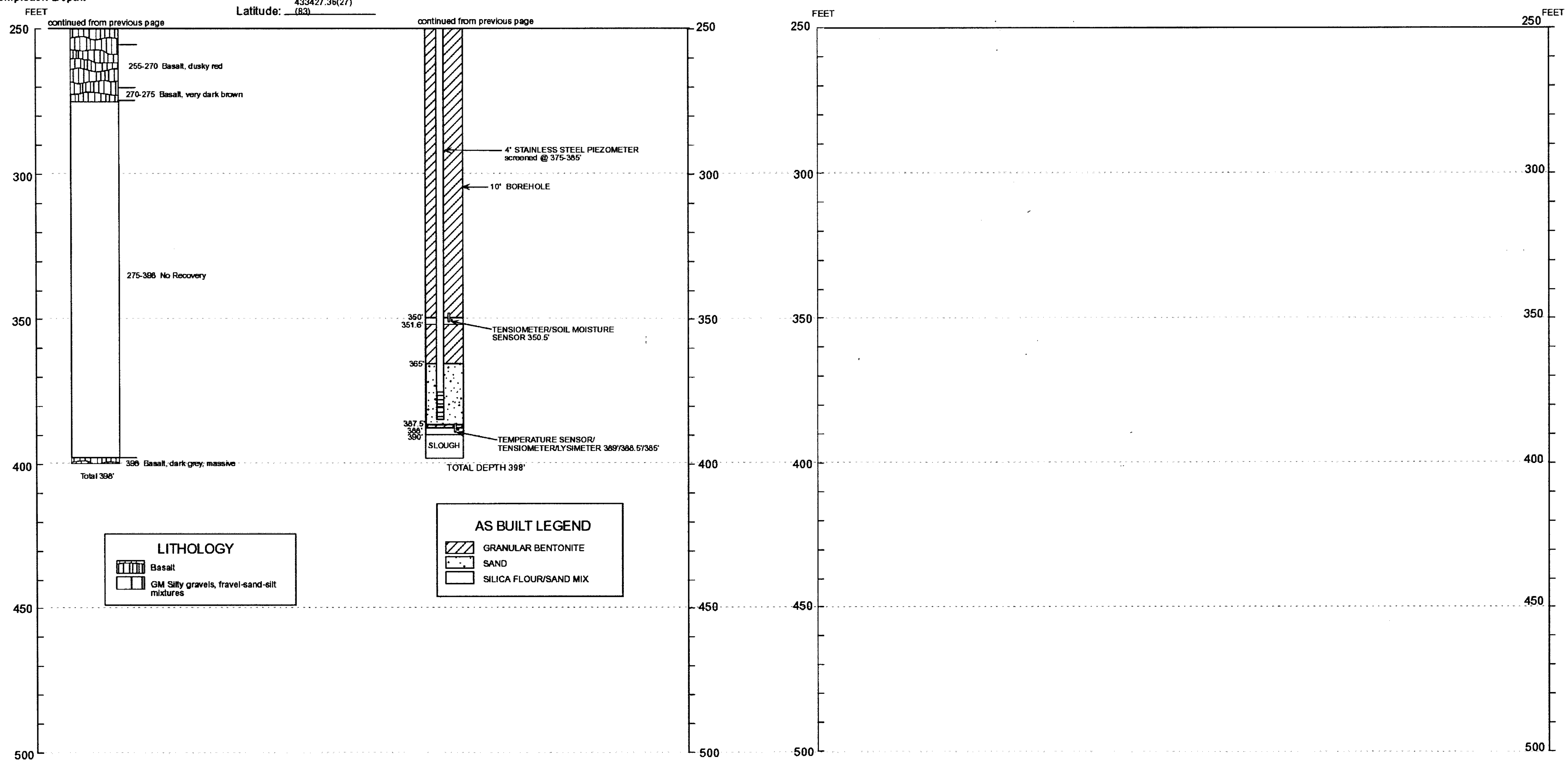
WELL NAME: ICPP-SCI-P-229 PAGE 2
Facility: INTEC
Well Type: Piezometer
Well Status: Active
Year Drilled: 2001
Total Depth: 398'
Start Date: 3/22/01
End Date: 3/28/01
Completion Depth: 389'

Brass Cap
Easting: 296871.53(27) (83)
Northing: 696121.27(27) (83)
Longitude: 1125559.36(27) (83)
Latitude: 433427.36(27) (83)

Measuring Point
Easting: 296870.22(27) (83)
Northing: 696120.65(27) (83)
Longitude: 1125559.38(27) (83)
Latitude: 433427.36(27) (83)

Driller: Dynatec/Rosario/Jensen
Geologist: Bates/Johannesen/Hall
Drill Method: Air rotary
Drill Fluid: Air
Land Surface: 4912.43(29)BC (88)BC 4914.61(29)MP (88)MP

Todays Date: 7/13/01
Water Level:
Water Level Date:
Water Level Access:



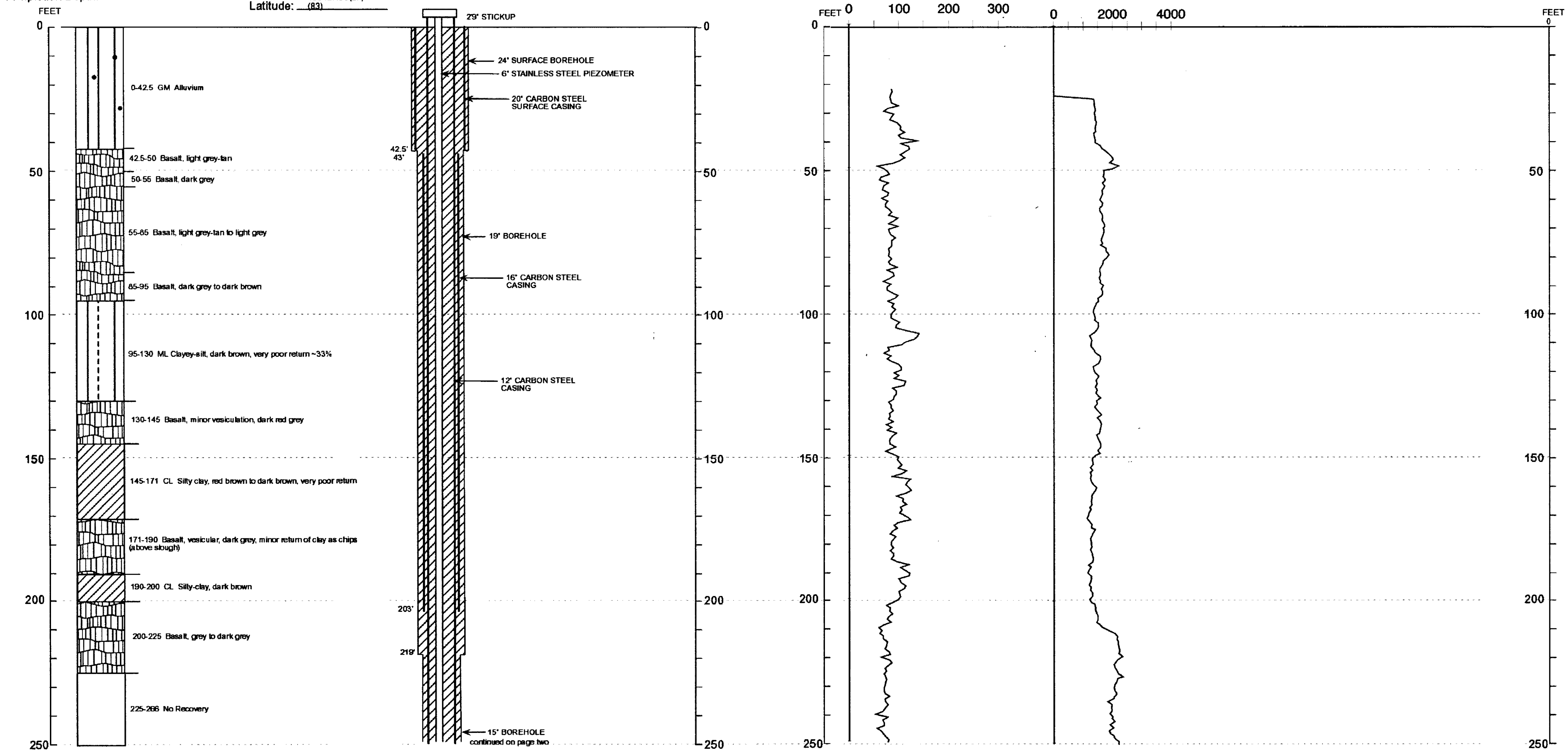
WELL NAME: ICPP-MON-A-230
Facility: INTEC
Well Type: Instrumented-piezometer
Well Status: Active
Year Drilled: 2001
Total Depth: 503'
Start Date: 2/27/01
End Date: 3/13/01
Completion Depth: 483'

Brass Cap
Easting: 296977.19(27) (83)
Northing: 696122.59(27) (83)
Longitude: 1125557.93(27) (83)
Latitude: 433427.39(27) (83)

Measuring Point
Easting: 296976.22(27) (83)
Northing: 696122.10(27) (83)
Longitude: 1125557.94(27) (83)
Latitude: 433427.38(27) (83)

Driller: Dynatec/Rosario/Jensen
Geologist: Johannesen/Hall/Whitmore
Drill Method: Air rotary
Drill Fluid: Air
Land Surface: 4912.41(29)BC (88)BC 4914.81(29)MP (88)MP

Todays Date: 7/16/01
Water Level:
Water Level Date:
Water Level Access:



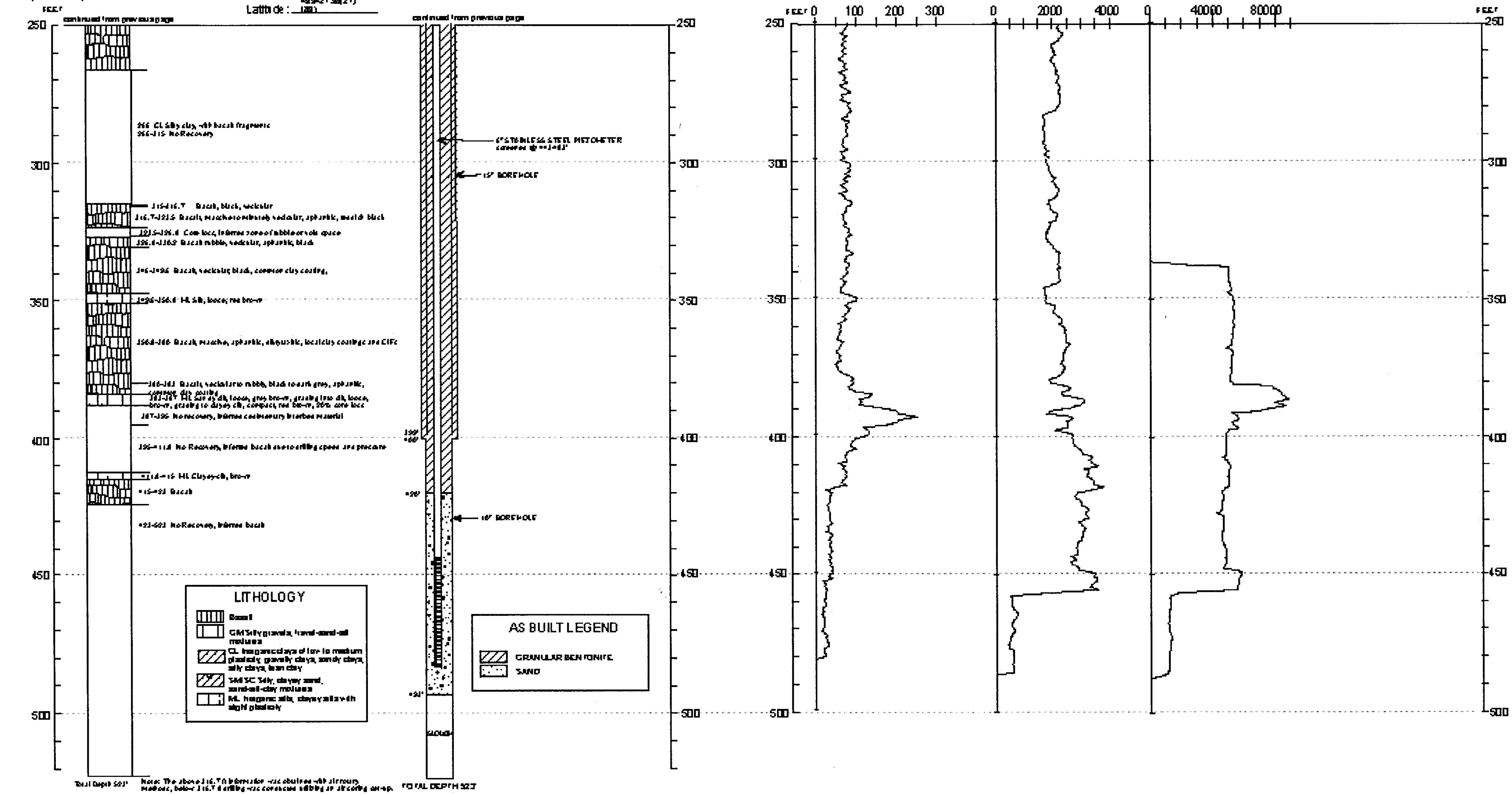
continued on page 2

WELL NAME: ICPP-MON-A-230 PAGE 2
Facility: INTEC
Well Type: Instrumented-piezometer
Well Status: Active
Year Drilled: 2001
Total Depth: 523'
Start Date: 2/27/01
End Date: 3/13/01
Completion Depth: 493'

Brass Cap
Easting:
Northing:
Longitude:
Latitude:
Measuring Point
Easting:
Northing:
Longitude:
Latitude:

Driller: Dynatec/Rosario/Jensen
Geologist: Johannesen/Hall/Whitmore
Drill Method: Air rotary
Drill Fluid: Air
Land Surface:

Todays Date: 7/16/01
Water Level:
Water Level Date:
Water Level Access:



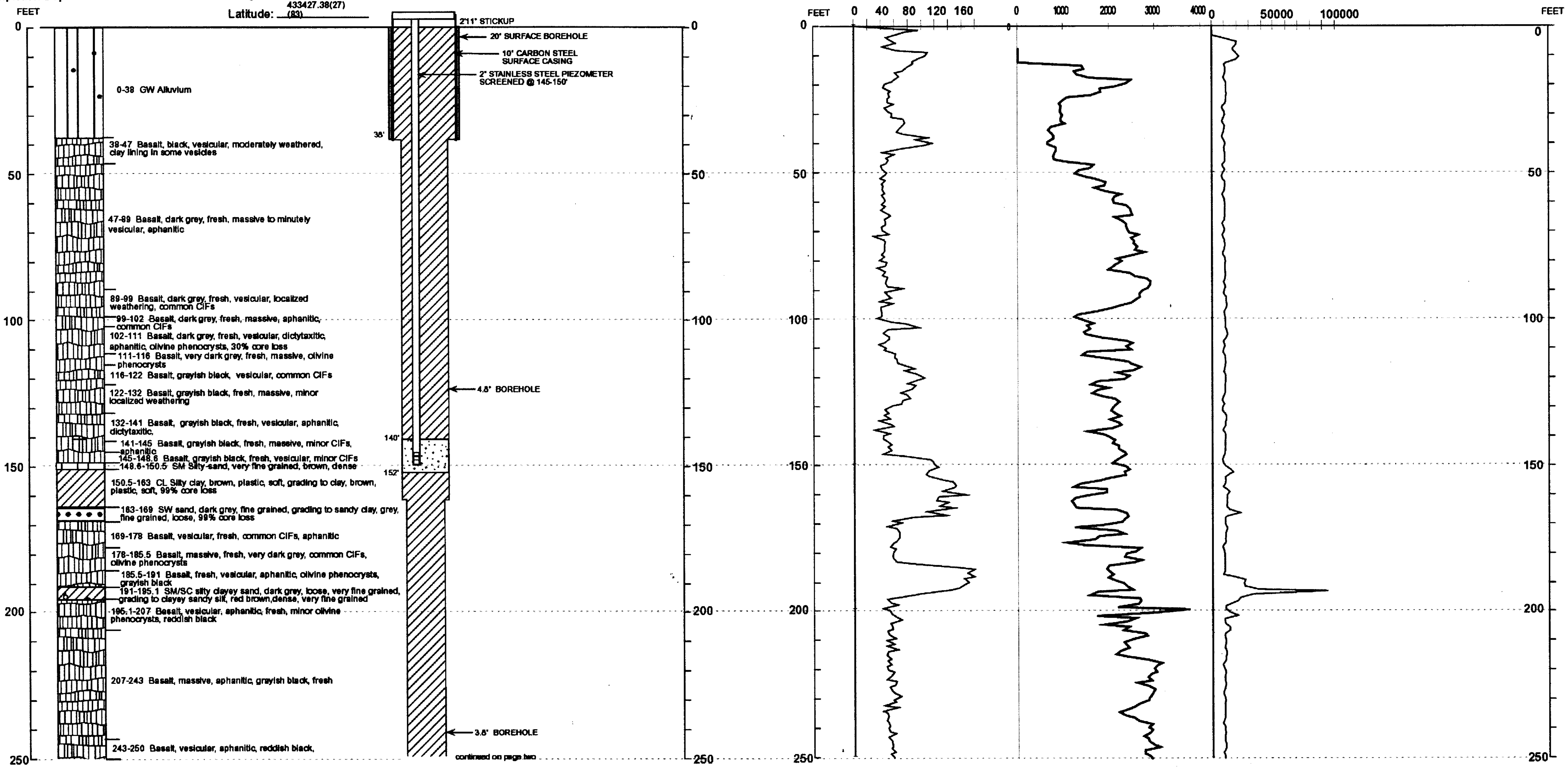
WELL NAME: ICPP-SCI-P-252
Facility: INTEC
Well Type: Piezometer
Well Status: Active
Year Drilled: 2001
Total Depth: 325'
Start Date: 1/23/01
End Date: 2/2/01
Completion Depth: 152'

Brass Cap
Easting: 296925.41(27) (83)
Northing: 696123.08(27) (83)
Longitude: 1125558.63(27) (83)
Latitude: 433427.38(27) (83)

Measuring Point
Easting: 296924.50(27) (83)
Northing: 696122.49(27) (83)
Longitude: 1125558.64(27) (83)
Latitude: 433427.38(27) (83)

Driller: Dynatec/Horshell
Geologist: C. Martin/E. Whitmore
Drill Method: Air coring
Drill Fluid: Air
Land Surface: 4912.36(29)BC (88)BC 4914.97(29)MP (88)MP

Todays Date: 7/26/01
Water Level:
Water Level Date:
Water Level Access: 2" piezometer



continued on page 2

continued on page two

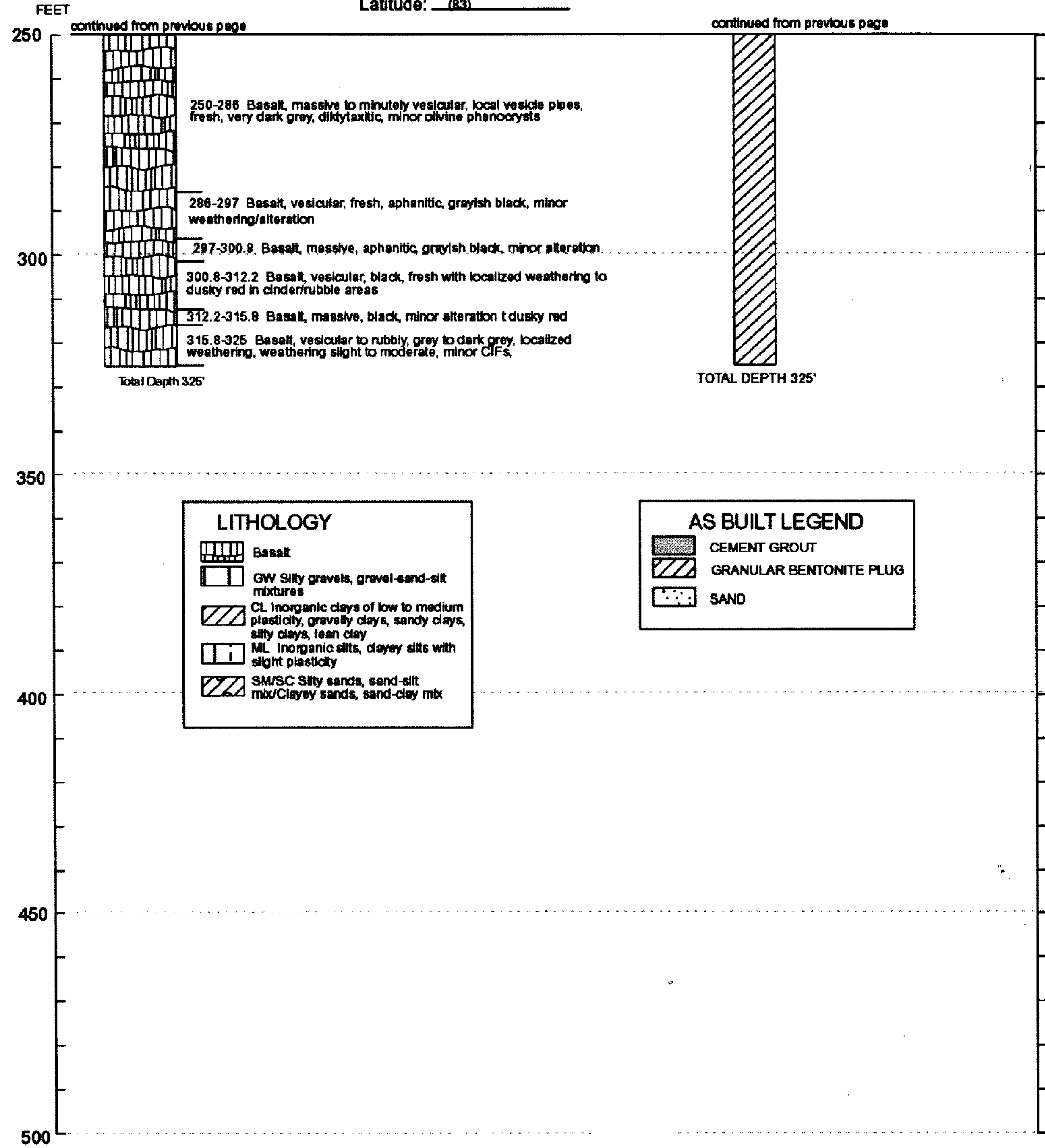
WELL NAME: ICPP-SCI-P-252 PAGE 2
Facility: INTEC
Well Type: Piezometer
Well Status: Active
Year Drilled: 2001
Total Depth: 402'
Start Date: 1/4/01
End Date: 1/19/01
Completion Depth: 198.5'

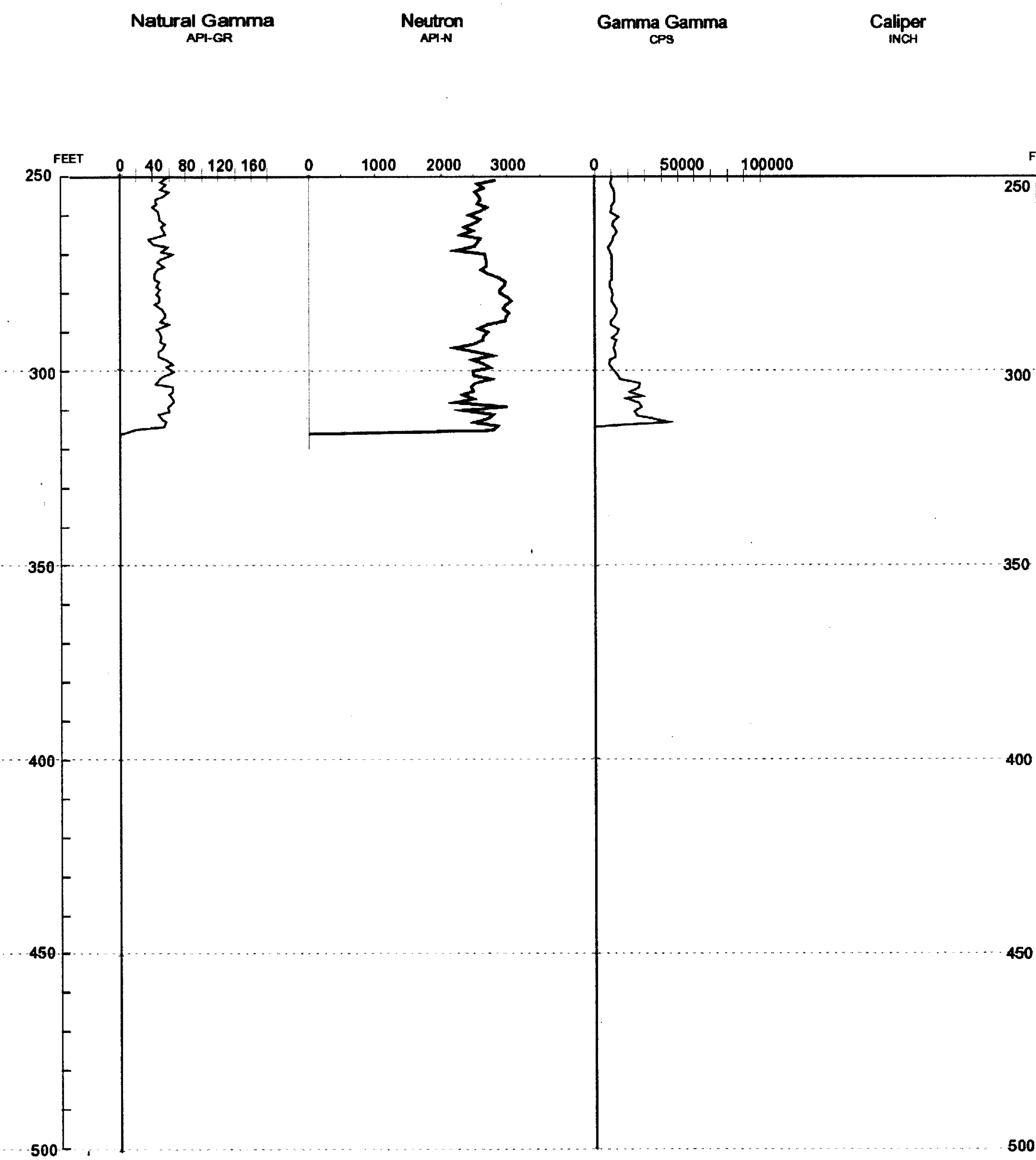
Brass Cap
Easting: 296925.41(27) (83)
Northing: 696123.08(27) (83)
Longitude: 1125558.63(27) (83)
Latitude: 433427.38(27) (83)

Measuring Point
Easting: 296924.50(27) (83)
Northing: 696122.49(27) (83)
Longitude: 1125558.64(27) (83)
Latitude: 433427.38(27) (83)

Driller: Dynatec/Horshell
Geologist: T. Matzen/E. Whitmore
Drill Method: Air coring
Drill Fluid: Air
Land Surface: 4912.38(29)BC (88)BC 4914.97(29)MP (88)MP

Todays Date: 7/26/01
Water Level:
Water Level Date:
Water Level Access: 2" piezometer





Attachment A-2

Associated Documents

Associated Documents

- DOE/ID-10587—Quality Assurance Project Plan for Waste Area Groups 1, 2, 3, 4, 5, 6, 7, 10, and Inactive Sites
- DOE/ID-10746—Long Term Monitoring Plan for Waste Area Group 3, Operable Unit 3-13, Group 4 Post –Record of Decision Monitoring
- DOE/ID-10749—Waste Management Plan for Operable Unit 3-13, Group 4 Perched Water (Draft)
- INEEL/EXT-97-00032—Implementing Project Management Plan for the Idaho National Engineering and Environmental Laboratory Remediation Program
- INEEL/EXT-2000-00257—Health and Safety Plan for the WAG 3, Operable Unit 3-13, Vadose Zone Well Drilling and Monitoring Project
- MCP-226—Well Construction/Well Abandonment
- MCP-227—Sampling and Analysis Process for Environmental Management Funded Activities
- MCP-230—Environmental Restoration Document Control Center Interface
- MCP-231—Logbooks
- MCP-244—Chain of Custody, Sample Handling and Packaging for CERCLA Activities
- MCP-444—Characterization Requirements for Solid and Hazardous Waste
- MCP-2725—Field Work at the INEEL
- MCP-2727—Performing Safety Reviews
- MCP-2798—Maintenance Work Control
- MCP-2864—Sample Management
- MCP-3003—Performing Pre-Job Briefings and Post-Job Reviews
- MCP-3480—Environmental Instructions for Facilities, Processes, Materials and Equipment Instruction

- MCP-3475—Temporary Storage of CERCLA-Generated Waste at the INEEL
- MCP-3653—Well Construction, Modifications, Compliance, and Management
- Manual #14A—Safety and Health Manual
- Manual #15B—Radiation Protection Manual
- SOP-11.4—"Field Decontamination of Heavy Equipment, Drill Rigs, and Drilling Equipment"
- TPR-52—"Field Decontamination of Sampling Equipment"
- TPR 56/SOP 11.8—"Groundwater Sampling"
- TPR-61—"Soil Sampling"
- TPR-79—"Levels of Analytical Method Data Validation"

Attachment A-3

Instrument and Surface Casing Stick-up Information

Table 1. Instrument and surface casing stick-up information.

Well Name	Well Alias	Casing/Instrument	Stick-up
ICPP-SCI-P-216	BLR-Alluvial	Casing (10 in.)	2 ft 9 in.
		Tensiometer	1 ft 7 in.
		Piezometer	1 ft 7 in.
ICPP-SCI-P-217	BLR-SP	Casing (16 in.)	2 ft 9 in.
		Tensiometer (132.5 ft)	1 ft 3 in.
		Tensiometer (166.75 ft)	1 ft 3 in.
		Piezometer	1 ft 5.5 in.
ICPP-SCI-P-218	BLR-DP	Casing (12 in.)	2 ft 9 in.
		Piezometer	1 ft 8 in.
		Tensiometer (352 ft)	1 ft 8 in.
		Tensiometer (395 ft)	1 ft 8 in.
ICPP-SCI-P-248	BLR-CH	Casing (6 in.)	2 ft 10 in.
		Piezometer	1 ft 10.5 in.
ICPP-SCI-P-219	STL-Alluvial	Casing (10 in.)	2 ft 7.5 in.
		Tensiometer	1 ft 4 in.
		Piezometer	1 ft 4 in.
ICPP-SCI-P-220	STL-SP	Casing (16 in.)	2 ft 7.5 in.
		Tensiometer (103.5 ft)	1 ft 10 in.
		Tensiometer (146 ft)	1 ft 10 in.
		Tensiometer (154 ft)	1 ft 10 in.
ICPP-SCI-P-221	STL-DP	Casing (12 in.)	3 ft 2.5 in.
		Piezometer	1 ft 6 in.
		Tensiometer (384 ft)	1 ft 5 in.
		Tensiometer (416 ft)	1 ft 5 in.
ICPP-SCI-P-251	STL-CH	Casing (6 in.)	2 ft 11.5 in.
		Piezometer (99-109 ft)	1 ft 5.5 in.
		Piezometer(140-145 ft)	1 ft 5.5 in.
ICPP-SCI-P-222	PP-Alluvial	Casing (10 in.)	2 ft 11 in.
		Piezometer	1 ft 11 in.
		Tensiometer	1 ft 11 in.
ICPP-SCI-P-223	PP-SP	Casing (12 in.)	3 ft 1 in.
		Piezometer	2 ft 3 in.
		Tensiometer (108.8 ft)	2 ft 5 in.
		Tensiometer (131.5 ft)	2 ft 5 in.
		Tensiometer (169 ft)	2 ft 4 in.
ICPP-SCI-P-224	PP-DP	Casing (20 in.)	2 ft 11 in.
		Piezometer (50-55 ft)	1 ft 11 in.
		Tensiometer (263.5 ft)	1 ft 11 in.
		Piezometer(372-382 ft)	1 ft 11 in.
		Tensiometer(383 ft)	1 ft 10 in.

Table 1. (continued).

Well Name	Well Alias	Casing/Instrument	Stick-up
ICPP-SCI-P-250	PP-CH	Casing (6 in.)	2 ft 8 in.
		Piezometer(187-192 ft)	1 ft 8.5 in.
		Piezometer(235-255 ft)	1 ft 9.5 in.
ICPP-SCI-P-247	CS-Alluvial	Casing (8 in.)	2 ft 7.5 in.
		Tensiometer	2 ft 2 in.
		Piezometer	2 ft 2 in.
ICPP-SCI-P-225	CS-SP	Casing (9 in.)	2 ft 9 in.
		Tensiometer (122 ft)	1 ft 10 in.
		Tensiometer (155 ft)	1 ft 10 in.
		Piezometer	1 ft 10 in.
ICPP-SCI-P-226	CS-DP	Casing (12 in.)	25 ft 7.5 in.
		Tensiometer (280 ft)	1 ft 8 in.
		Tensiometer (287 ft)	1 ft 8 in.
		Piezometer	1 ft 8 in.
		Tensiometer (383 ft)	1 ft 8 in.
ICPP-SCI-P-249	CS-CH	Casing (6 in.)	2 ft 10 in.
		Piezometer	1 ft 4 in.
ICPP-SCI-P-227	TF-Alluvial	Casing (10 in.)	2 ft 9 in.
		Tensiometer	1 ft 8.5 in.
		Piezometer	1 ft 8.5 in.
ICPP-SCI-P-228	TF-SP	Casing (16 in.)	2 ft 11 in.
		Tensiometer (118 ft)	2 ft
		Piezometer	2 ft
		Tensiometer (157 ft)	2 ft
		Tensiometer (173 ft)	2 ft
ICPP-SCI-P-229	TF-DP	Casing (12 in.)	2 ft 6 in.
		Tensiometer (350.5 ft)	1 ft 5 in.
		Piezometer	2 ft 4.5 in.
		Tensiometer (389 ft)	1 ft 5 in.
ICPP-MON-A-230	TF-Aquifer	Casing (12 in.)	2 ft 9 in.
		Piezometer	1 ft 9 in.
ICPP-SCI-P-252	TF-CH	Casing (6 in.)	2 ft 11 in.
		Piezometer	1 ft

Attachment A-4

Supporting Documentation for the INTEC Group 4, Phase 1, Drilling Decontamination Pad Closeout

Field Copy
8-22-01
[illegible]

Document ID: PLN-941
Revision ID: 0
Effective Date:

Plan

Emergency Sampling Job CPP-1789 Gravel Area (WGS-054-01)

INEEL
Idaho National Engineering & Environmental Laboratory
BECHTEL BWXT IDAHO, LLC

Form 412.14
10/05/1XIX
Rev. 02

CONTENTS

TABLES

EMERGENCY SAMPLING JOB (WGS-054-01) CPP-1789 GRAVEL AREA

1. INTRODUCTION

As required by MCP-9365 "Abbreviated Sampling and Analysis Plans", this write-up will summarize the proposed sampling event. 8/13/01 – Elita Castleberry of Waste Generator Services (WGS) submitted Lotus form 435.26 to WGS regarding an emergency sampling request outside of CPP-1789 in the gravel area.

Persons/Affiliation reviewing the summary and approving the associated document action request (DAR):

WGS Summary Preparer:	L. Davis
WGS INTEC Representatives:	E. Castleberry
Sampling Program Manager	J. Orme/Donna Haney
WGS IH	Kori Hatch
INTEC Project Manager:	Rob Podgorney

2. SAMPLING DESIGN AND PROCEDURE

The biased area to be sampled is CPP-1781 gravel area. CPP-1789 is the INTEC CERCLA Satellite Accumulation Area. In May of 2001, a drill was being operated in the gravel area. The well was being drilled to monitor for F001, F002, F005 and U134 codes. The drill was being deconned on a decon pad when a spill may have occurred. There was a tear in the decon pad, however no staining or discoloration was observed on the soil beneath. In addition, no decontamination effluent was observed in contact with the tear area. This sampling is intended to confirm these observations. A small spill was reported in the Northwest corner of the decon pad and the material was cleaned up. This sampling will confirm this cleanup.

The areas to be sampled were marked by Rob Podgorney. There is no obvious staining. The project manager, Rob Podgorney has requested that samples be taken from the two potential spill areas. In order to establish the background of the area, a background sample will be taken from the clean area. Rob Podgorney has requested that the material to be sampled represents the first 6" of soil. Two orange flags identify the suspected spill area and a blue flag identifies the background sample. Duplicate samples will also be taken adjacent to the original hole.

The samples will be collected using an auger according to TPR-6671. The purpose of this sampling is to verify that a spill has occurred resulting in contamination. If the material is determined to be hazardous, it will be disposed of in the INEEL CERCLA Disposal Facility.

The method, bottle and preservation type is listed in the following table.

Table 1. Bottle requirements. Darwin-Please Confirm

Analysis	Bottle Requirements	Method	Preservation	Holding Time
TCLP Metals	Wide Mouth Glass	3000/6000/ 7000 series	4oC	28 days Hg
SVOCs	Wide Mouth Glass	8270	4oC	14 days
VOCS	Wide Mouth Glass	8260	4oC	14 days

Table 2. Sample numbers

Waste Stream *Identifier*	**Sample ID**	**Analyses**
Orange Flag #1	W05401011TM	TCLP Metals — ship screen after selected
	W05401012TM	TCLP Metals
	W05401011SV	SVOC
	W054010112SV	SVOC
	W05401011VC	VOC
	W05401012VC	VOC
Orange Flag #2	W05401021TM	TCLP Metals – ship screen after, selected
	W05401022TM	TCLP Metals
	W05401021VC	VOC
	W05401022VC	VOC
	W05401021SV	SVOC
	W05401022SV	SVOC
Blue Flag	W05401031TM	TCLP Metals – ship screen also selected
	W05401032TM	TCLP Metals
	W05401031SV	SVOC
	W05401032SV	SVOC
	W05401031VC	VOC
	W05401032VC	VOC

The charge number is 3XD640220; Level B validation has been requested with a 35-day turnaround.

3. DOCUMENTATION

This sampling event is being performed as an "Operational Activity". Because of this, WGS has used the process outlined in MCP-3562 to establish work control for this sampling event. MCP-3003, "Performing Pre-job and Post Job Reviews" requires completion by the job site supervisor of pre and post job checklists.

Sample Logbook

Project: WGS-054-01 COC#: 16150

Date (mm/dd/yy): 8-27-01 Charge#: T15106512

Samplers: Davis

Location: CPP 1789 bkgd Requester: Castleberry

Weather: sunny ; hot

Prejob formal? _____ (place signed checklist in project file) RWP #: NA

Prejob informal? ✓ (review of checklist) SWP #: NA

Postjob check: ✓

Equipment	Unique Identifier	Field Instrumentation	Property ID
Soil Auger	NA	NA	NA

Field deviations (note: any safety deviations must be approved verbally or in writing by the cognizant safety professional):

Recorded by: L Davis QA check: Tyler L Winder

Date: 8-27-01 Date: 9/13/01

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Sample ID#	Time	Analysis Code	Container	Lot #	Preservative
W05401011TM	1220	1	Wide mouth gl	1023010	4°C
W05401012TM	1220	1			
W05401021TM	1215	1			
W05401022TM	1215	1			
W05401031TM	1127	1			
W05401032TM	1127				
W05401011SV	1220	3			
W05401012SV	1220	3			
W05401011VC	1220	2			
W05401012VC	1220	2			
W05401021SV	1215	3			
W05401022SV	1215	3			
W05401021VC	1215	2			
W05401022VC	1215	2			
W05401031SV	1127	3			
W05401032SV	1127	3			
W05401031VC	1127	2			
W05401032VC	1127	2			
W05401031 GS	1127	4			
W05401021GS	1215	4			
W05401011GS	1220	4			

#'s relabeled & [illegible]

WGS-2001-06

Sample ID#	Time	Analysis Code	Container	Lot #	Preservative

Analysis Code	Analysis Description	Liquid	Solid
#1	TCLP Metals		X
#2	VOC		X
#3	SVOC		X
#4	Ship SC		X
#5			
#6			
#7			
#8			

Recorded by: J. Davis

Date: 8/27/01

QA check: T. Winder

Date: 8/28/01

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Following is the narrative description of the sampling event:

11:47am Winder & Davis Began to stage the sample area. Davis pre-jobs Soil is very Rocky. Begin w/ clean hole (Blue Flag) W0540103 scans. No staining or odor. Very Rocky; hard to augur. Took several (4) cores to obtain adequate vol. 1200 began Decon. Move to Flag #2 (02) scans to begin, 1202 pulled 1st core. Winder says this is easier to augur although visually looks similar to last hole. No staining though. 1215 sample time - fill VOCs 1st. 1217 Decon, move to Flag #1 (01) scans No stain or odor. Looks the same as others in all of these augers went Down full length of auger 6 inch 12:30 Winder Davis finish Filling sample Bottles. and Decon tools for storage 12:35 Davis takes the truck and Heads to find ~~and~~ an RCT To survey out the samples. 12:40 Davis arrives with Chris Carison the RCT. 12:41 Rad survey is complete and samples are clean. Gamma scans are brought to lab - other samples are stored in truck.

T. Wh 8/28/01

Recorded By: D Davis

Date: 8-27-01

QA Check: T. Winder

Date: 8/28/01

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Idaho National Engineering and Environmental Laboratory

INTEROFFICE MEMORANDUM

Date:	November 20, 2001		
To:	R. Podgorney	MS 2107	6-1224
From:	L. Davis	MS 4142	6-5580
Subject:	WGS-054-01 CLOSURE REPORT FOR CPP-1789 GRAVEL AREA		

Enclosed are copies of the analytical data, PLN-941 and logbook notes for sampling of the CPP-1789 gravel area soil; WGS-054-01. On August 28, 2001, samples were collected in association with this project and shipped to the laboratory under full chain of custody.

The data were validated by the Sample Management Office (SMO) at method validation level "B," as defined in LMITCO TPR-79, "Levels of Analytical Method Data Validation."

TCLP Metals L & V Summary: All chromium results, except W05401021TM and W05401022TM, have been qualified with a U validation flag to denote that the data is not detectable at the reported value due to positive preparation blank detection.

All lead sample results, except W05401022TM, have been qualified with a U validation flag to denote that the data is non-detectable at the reported value due to positive preparation blank detection.

All selenium sample results have been qualified with a U validation flag to denote that the data is non-detectable at the reported value due to positive preparation blank detection.

Volatile Organic Compounds (VOC)L&V Summary: Initial calibration percent relative standard deviations exceeded the 30% quality control limit on 09/07/01 for the following compounds: bromomethane, carbon disulfide, iodomethane, acrolein, 1,4-dioxane, and isobutyl alcohol. Positive results for carbon disulfide and isobutyl alcohol, qualified as nondetected due to method blank contamination, were qualified as estimated UJ. The positive result for carbon disulfide in sample W05401031VC was qualified as estimated J. Nondetected results for bromomethane were qualified as estimated, UJ, since the exceedance was greater that 60%. No qualifiers were assigned to acrolein and idomethane since the compounds were not detected in the samples and the exceedance was less than 60%. No qualifiers were assigned to 1,4-dioxane since this compound was qualified for a more severe calibration noncompliance.

Initial calibration relative response factors fell below the 0.05 quality control limit on 09/07/01 for the following compounds: 2-chloro-1, 3-butadiene, 1,4-dioxane, and isobutyl alcohol. Nondetected results were rejected, R. Positive results for isobutyl alcohol, qualified as nondetected due to method blank contamination, were qualified as estimated UJ.

Laboratory method blanks contained isobutyl alcohol and carbon disulfide. Positive results less than the blank action levels were qualified as nondetected, U.

SVOC L&V Summary: An initial calibration percent relative standard deviation exceeded the 30% quality control limit for the famphur. Nondetected results in all samples were rejected R, since the exceedance was greater than 90%.

Initial and continuing calibration relative response factors fell below the 0.05 quality control limit for pentachloronitrobenzence. Nondetected results were rejected, R in all samples.

Recovery on perylene-d12 fell below the –50% quality control limit in samples W05401012SV, W05401022SV, W05401031SV, W05401032SV, W05401012SV. Nondetected and positive results associated with this standard were qualified as estimated UJ, and J in these samples.

The laboratory did not analyze for hexachlorophene stating "this compound has non-reproducible chromatographic performance according to the method". This statement is on page 7 in SW-846 Method 8270C. The laboratory identified that Ethyl methacrylate and methyl methacrylate were not analyzed for in the SVOC laboratory and the two compounds would be part of the volatiles target list. Methyl methacrylate was reported in the volatile SDG, however ethyl methacrylate was not reported. During the tentatively identified compound searches, laboratory personnel were cognizant that ethyl methacrylate was not analyzed for and watched for the compound specifically. Ethyl methacrylate was not identified in any of the samples received.

When applicable, the following formula is used to determine the appropriate number of samples needed to properly characterize your waste. **However, if only one sample is collected, there is no regulatory limit to compare to or all analytes within a certain analysis are non-detects this determination cannot be performed.**

$n=t^2_{20}S^2/RT-\bar{x}$

$n=$ Appropriate number of samples to take from a solid waste

$t_{20}=$ value from the student t table for the appropriate number of samples collected (n-1) found in SW-846, Vol. II, page NINE-4, table 9-2.

$S=$ Standard deviation

$RT=$ Regulatory threshold

$\bar{x}$ = Mean of observation measurements.

Orange Flag #1

The data results for the toxicity characteristic leaching procedure (TCLP) list metals are found in the following table. If a value in column H exceeds a value in column I, then the waste exceeds the TCLP regulatory level for that analyte. Column J calculates the appropriate number of samples needed to properly characterize your waste. **For this media, the results show that all metals are less than the TCLP regulatory limit and the number of samples collected, two, is statistically appropriate.**

A	B	C	D	E	F	G	H	I	J
ANALYTE	W05401011TM (UG/L)	DATA FLAG	W05401012TM (UG/L)	DATA FLAG	AVE. (UG/L)	STAND. DEV. (UG/L)	UPPER CONF. LIMIT (UG/L)	TCLP REG. LIMIT (UG/L)	APP. NUMBER OF SAMPLES
ARSENIC	10.6		10.0	U	NA	NA	NA	5000.0	NA
BARIUM	1070.0		997.0		1034	52	1146	100000.0	0.0000
CADMIUM	5.5	B	4.0	B	5	1	7	1000.0	0.0
CHROMIUM	5.3	(U)	3.8	B(U)	NA	NA	NA	5000.0	NA
LEAD	7.8	B(U)	3.4	B(U)	NA	NA	NA	5000.0	NA
MERCURY	1.0	U	1.0	B	NA	NA	NA	200.0	NA
SELENIUM	20.9	(U)	10.2	B(U)	NA	NA	NA	1000.0	NA
SILVER	455.0		156.0		305.5	211.4	765.7	5000.0	0.0192

Data Flag – A "U" is entered if the analyte was analyzed for but was not detected. The associated numerical value is the sample detection limit. A "B" is entered if the value is between the laboratory MDL and the required detection limit (RQL).
Validation Flag (inside parenthesis)-A (U) is entered is the associated value was less than 5 times the highest positive amount in any laboratory blank.
NA – Not applicable due to "U" coded data.

The data results for the Appendix IX SVOCs are found in the following table.

ANALYTE	W05401011SV (UG/KG)	DATA FLAG	W05401012SV (UG/KG)	DATA FLAG	AVERAGE (UG/KG)	STANDARD DEVIATION (UG/KG)	UPPER CONFIDENCE LIMIT (UG/KG)
PYRIDINE	340	U	340	U	NA	NA	NA
N-NITROSODIUMETHYLAMINE	340	U	340	U	NA	NA	NA
2-PICOLINE	340	U	340	U	NA	NA	NA
METHYLMETHANESULFONATE	340	U	340	U	NA	NA	NA
ETHYLMETHANESULFONATE	340	U	340	U	NA	NA	NA
ANILINE	340	U	340	U	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	340	U	340	U	NA	NA	NA
PHENOL	340	U	340	U	NA	NA	NA
2-CHLOROPHENOL	340	U	340	U	NA	NA	NA
1,3-DICHLOROBENZENE	340	U	340	U	NA	NA	NA
1,4-DICHLOROBENZENE	340	U	340	U	NA	NA	NA
1,2-DICHLOROBENZENE	340	U	340	U	NA	NA	NA
BENZYL ALCOHOL	340	U	340	U	NA	NA	NA
BIS(2-CHLOROISOPROPYL)ETHER	340	U	340	U	NA	NA	NA
2-METHYLPHENOL	340	U	340	U	NA	NA	NA
ACETOPHENONE	340	U	340	U	NA	NA	NA
HEXACHLOROETHANE	340	U	340	U	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	340	U	340	U	NA	NA	NA
3&4-METHYLPHENOL	670	U	670	U	NA	NA	NA
NITROBENZENE	340	U	340	U	NA	NA	NA
N-NITROSOPIPERIDINE	340	U	340	U	NA	NA	NA
ISOPHORONE	340	U	340	U	NA	NA	NA
2-NITROPHENOL	340	U	340	U	NA	NA	NA
2-4-DIMETHYLPHENOL	340	U	340	U	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	340	U	340	U	NA	NA	NA
2,4-DICHLOROPHENOL	340	U	340	U	NA	NA	NA
1,2,4-TRICHLOROBENZENE	340	U	340	U	NA	NA	NA
NAPHTHALENE	340	U	340	U	NA	NA	NA
BENZOIC ACID	340	U	340	U	NA	NA	NA
A,A-DIMETHYLPHENETHYLAMINE	340	U	340	U	NA	NA	NA
4-CHLOROANILINE	340	U	340	U	NA	NA	NA
2,6-DICHLOROPHENOL	340	U	340	U	NA	NA	NA
HEXACHLOROBUTADINE	340	U	340	U	NA	NA	NA
N-NITROSO-DI-N-BUTYLAMINE	340	U	340	U	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	340	U	340	U	NA	NA	NA
2-METHYLNAPHTHALENE	340	U	340	U	NA	NA	NA
1,2,4,5-TETRACHLOROBENZENE	340	U	340	U	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	340	U	340	U	NA	NA	NA
2,4,6-TRICHLOROPHENOL	340	U	340	U	NA	NA	NA

ANALYTE	W05401011SV (UG/KG)	DATA FLAG	W05401012SV (UG/KG)	DATA FLAG	AVERAGE (UG/KG)	STANDARD DEVIATION (UG/KG)	UPPER CONFIDENCE LIMIT (UG/KG)
2,4,5-TRICHLOROPHENOL	340	U	340	U	NA	NA	NA
2-CHLORONAPHTHALENE	340	U	340	U	NA	NA	NA
2-NITROANILINE	340	U	340	U	NA	NA	NA
ACENAPHTHYLENE	340	U	340	U	NA	NA	NA
DIMETHYLPHTHALATE	340	U	340	U	NA	NA	NA
2,6-DINITROTOLUENE	340	U	340	U	NA	NA	NA
ACENAPHTHENE	340	U	340	U	NA	NA	NA
3-NITROANILINE	340	U	340	U	NA	NA	NA
2,4-DINITROPHENOL	340	U	340	U	NA	NA	NA
DIBENZOFURAN	340	U	340	U	NA	NA	NA
PENTACHLOROBENZENE	340	U	340	U	NA	NA	NA
2,4-DINITROTOLUENE	340	U	340	U	NA	NA	NA
4-NITROPHENOL	340	U	340	U	NA	NA	NA
1-NAPHTHYLAMINE	340	U	340	U	NA	NA	NA
2-NAPHTHYLAMINE	340	U	340	U	NA	NA	NA
2,3,4,6-TETRACHLOROPHENOL	340	U	340	U	NA	NA	NA
FLOURENE	340	U	340	U	NA	NA	NA
4-CHLOROPHENYL-PHENYLETHER	340 .	U	340	U	NA	NA	NA
DIETHYLPHTHALATE	340	U	340	U	NA	NA	NA
4-NITROANILINE	340	U	340	U	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	340	U	340	U	NA	NA	NA
4-BROMOPHENYL-PHENYLETHER	340	U	340	U	NA	NA	NA
1,3,5-TRINITROBENZENE	340	U	340	U	NA	NA	NA
HEXACHLOROBENZENE	340	U	340	U	NA	NA	NA
4-AMINOBIPHENYL	340	U	340	U	NA	NA	NA
PENTACHLOROPHENOL	340	U	340	U	NA	NA	NA
PHENANTHRENE	340	U	340	U	NA	NA	NA
ANTHRANCE	340	U	340	U	NA	NA	NA
CARBAZOLE	340	U	340	U	NA	NA	NA
DI-N-BUTYLPHTHALATE	340	U	340	U	NA	NA	NA
FLUORANTHENE	340	U	340	U	NA	NA	NA
PYRENE	340	U	340	U	NA	NA	NA
P-(DIMETHYLAMINO)AZOBENZENE	340	U	340	U	NA	NA	NA
BUTYLBENZYLPHTHALATE	340	U	340	U	NA	NA	NA
3,3'-DICHLOROBENZIDINE	340	U	340	U	NA	NA	NA
BENZO(A)ANTHRACENE	340	U	340	U	NA	NA	NA
CHRYSENE	340	U	340	U	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	47	J	43	J(J)	45	3	51
DI-N-OCTYLPHTHALATE	340	U	340	U(UJ)	NA	NA	NA
BENZO(B)FLUORANTHENE	340	U	340	U(UJ)	NA	NA	NA
BENZO(K)FLUORANTHENE	340	U	340	U(UJ)	NA	NA	NA
7,12-DIMETHYLBENZ(A)ANTHRACE	340	U	340	U(UJ)	NA	NA	NA
BENZO(A)PYRENE	340	U	340	U(UJ)	NA	NA	NA
3-METHYLCHOLANTHRENE	340	U	340	U(UJ)	NA	NA	NA
INDENO(1,2,30CD)PYRENE	340	U	340	U(UJ)	NA	NA	NA

ANALYTE	W05401011SV (UG/KG)	DATA FLAG	W05401012SV (UG/KG)	DATA FLAG	AVERAGE (UG/KG)	STANDARD DEVIATION (UG/KG)	UPPER CONFIDENCE LIMIT (UG/KG)
DIBENZ(A,H)ANTHRANCENE	340	U	340	U(UJ)	NA	NA	NA
BENZO(G,H,I)PERYLENE	340	U	340	U(UJ)	NA	NA	NA
N-NITROSOMETHYLETHYLAMINE	340	U	340	U	NA	NA	NA
N-NITROSODIETHYLAMINE	340	U	340	U	NA	NA	NA
PENTACHLOROETHANE	340	U	340	U	NA	NA	NA
N-NITROSOPYRROLIDINE	340	U	340	U	NA	NA	NA
N-NIROSOMORPHOLINE	340	J	340	U	NA	NA	NA
O&P-TOLUIDINE	670	U	670	U	NA	NA	NA
O,O,0-TRIETHYPHOSHORORTHIOATE	340	U	340	U	NA	NA	NA
HEXACHLOROPROPENE	340	U	340	U	NA	NA	NA
1,4&1-2-PHENYLENEDIAMINE	670	U	670	U	NA	NA	NA
ISOSAFROLE	340	U	340	U	NA	NA	NA
SAFROLE	340	U	340	U	NA	NA	NA
1,4-NAPHTHOQUINONE	340	U	340	U	NA	NA	NA
1,3-DINITROBENZENE	340	U	340	U	NA	NA	NA
5-NITRO-O-TOLUIDINE	340	U	340	U	NA	NA	NA
THIONAZIN	340	U	340	U	NA	NA	NA
N-NITROSDIPHENYLAMINE/DIPHENYLAMINE	670	U	670	U	NA	NA	NA
PHENACETIN	340	U	340	U	NA	NA	NA
PENTACHLORONITROBENZENE	340	U(R)	340	U(R)	NA	NA	NA
PRONAMIDE	340	U	340	U	NA	NA	NA
DINOSEB	340	U	340	U	NA	NA	NA
4-NITROQUINOLINE-1-OXIDE	340	U	340	U	NA	NA	NA
METHAPYRILINE	340	U	340	U	NA	NA	NA
ARAMITE	340	U	340	U	NA	NA	NA
3,3'-DIMETHYLBENZIDINE	340	U	340	U	NA	NA	NA
FAMPHUR	340	U(R)	340	U(R)	NA	NA	NA
2-ACETYLAMINOFLUORENE	340	U	340	U	NA	NA	NA

Data Flags-outside parenthesis- A U is entered if the analyte was analyzed for but not detected. The associated numerical value is the analyte detection limit. A J is entered if the associated value is below the quantitation limit, but above the instrument detection limit.
Validation flag (inside parenthesis)- A (R) is entered if the data was rejected due to calibration noncompliances. A (J) is entered if the value is an estimate. A (UJ) is entered is the positive result is an estimate due to deficient internal standard recoveries.
NA – Not applicable due to "U" coded data.

The data results for the Appendix IX VOCs are found in the following table.

TARGET ANALYTE	W05401011VC (UG/KG)	DATA FLAG	W05401012VC (UG/KG)	DATA FLAG	AVERAGE (UG/KG)	STANDARD DEVIATION (UG/KG)	UPPER CONFIDENCE LIMIT (UG/KG)
CHLOROMETHANE	1	U	1	U	NA	NA	NA
BROMOMETHANE	1	U(UJ)	1	U(UJ)	NA	NA	NA
VINYL CHLORIDE	1	U	1	U	NA	NA	NA
CHLOROETHANE	1	U	1	U	NA	NA	NA
METHYLENE CHLORIDE	1	U	1	U	NA	NA	A
ACETONE	5	U	5	U	NA	A	NA
CARBON DISULFIDE	10	U(UJ)	11	U(UJ)	NA	NA	NA

TARGET ANALYTE	W05401011VC (UG/KG)	DATA FLAG	W05401012VC (UG/KG)	DATA FLAG	AVERAGE (UG/KG)	STANDARD DEVIATION (UG/KG)	UPPER CONFIDENCE LIMIT (UG/KG)
1,1-DICHLOROETHENE	1	U	1	U	NA	NA	NA
1,1-DICHLOROETHANE	1	U	1	U	NA	NA	A
1,2-DICHLOROETHENE (TOTAL)	1	U	1	U	NA	NA	NA
CHLOROFORM	1	U	1	U	NA	NA	NA
1,2-DICHLOROETHANE	1	U	1	U	NA	NA	NA
2-BUTANONE	5	U	5	U	NA	NA	NA
1,1,1-TRICHLOROETHANE	1	U	1	U	NA	NA	NA
CARBON TETRACHLORIDE	1	U	1	U	NA	NA	NA
VINYL ACETATE	1	U	1	U	NA	NA	NA
BROMODICHLOROMETHANE	1	U	1	U	NA	NA	NA
1,2-DICHLOROPROPANE	1	U	1	U	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	1	U	1	U	NA	NA	NA
TRICHLOROETHENE	1	U	1	U	NA	NA	NA
DIBROMOCHLOROMETHANR	1	U	1	U	NA	NA	NA
1,1,2-TRICHLOROETHANE	1	U	1	U	NA	NA	NA
BENZENE	1.2		1.2		1.2	0.0	1.2
TRANS-1,3-DICHLOROPROPENE	1	U	1	U	NA	NA	NA
BROMOFORM	1	U	1	U	NA	NA	NA
4-METHYL-2-PENTANONE	5	U	5	U	NA	NA	NA
2-HEXANONE	5	U	5	U	NA	NA	NA
TETRACHLOROETHENE	1	U	1	U	NA	NA	NA
TOLUENE	4.7		4.8		4.8	0.1	4.9
1,1,2,2-TETRACHLOROETHANE	1	U	1	U	NA	NA	NA
CHLOROBENZENE	1	U	1	U	NA	NA	NA
ETHYLBENZENE	1	U	1	U	NA	NA	NA
STYRENE	1	U	1	U	NA	NA	NA
XYLENE(TOTAL)	1		1.1		1.1	0.1	1.2
DICHLORODIFLUOROMETHANE	1	U	1	U	NA	NA	NA
TRICHLOROTLUOROMETHANE	1	U	1	U	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	1	U	1	U	NA	NA	NA
IDOMETHANE	5	U	5	U	NA	NA	NA
ALLYL CHLORIDE	1	U	1	U	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1	U	1	U	NA	NA	NA
PROPIONITRILE	1	U	1	U	NA	NA	NA
ACETONITRILE	5	U	5	U	NA	NA	NA
ACROLEIN	2	U	2	U	NA	NA	NA
2-CHLORO-1,3-BUTADIENE	1	U(R)	1	U(R)	NA	NA	NA
ACRYLONITRILE	1	U	1	U	NA	NA	NA
1,4-DIOXANE	50	U(R)	50	U(R)	NA	NA	NA
METHACRYLONITRILE	1	U	1	U	NA	NA	NA
METHYL METHACRYLATE	1	U	1	U	NA	NA	NA
DIBROMOMETHANE	1	U	1	U	NA	NA	NA
ISOBUTYL ALCOHOL	7	(UJ)	5	U(R)	NA	NA	NA

TARGET ANALYTE	W05401011VC (UG/KG)	DATA FLAG	W05401012VC (UG/KG)	DATA FLAG	AVERAGE (UG/KG)	STANDARD DEVIATION (UG/KG)	UPPER CONFIDENCE LIMIT (UG/KG)
1,2-DIBROMOETHANE	1	U	1	U	NA	NA	NA
1,1,1,2-TETRACHLOROETHANE	1	U	1	U	NA	NA	NA
M&P-XYLENE	3		3.1		3.1	0.1	3.2
O-XYLENE	1		1.1		1.1	0.1	1.2
1,2,3-TRICHLOROPROPANE	1	U	1	U	NA	NA	NA
TRANS-1,4-DICHLORO-2-BUTENE	1	U	1	U	NA	NA	NA
1,2-BIBROMO-3-CHLOROPROPANE	1	U	1	U	NA	NA	NA

Data Flags-outside parenthesis- A U is entered if the analyte was analyzed for but not detected. The associated numerical value is the analyte detection limit.
Validation flag (inside parenthesis)- A (R) is entered if the data was rejected due to calibration noncompliances.. A (J) is entered if the value is an estimate.
A (UJ) is entered is the positive result is was qualified as nondetected due to deficient calibration recoveries A (U) is entered if the positive result was nondetected due to method blank contamination.
NA – Not applicable due to "U" coded data.

Orange Flag #2

The data results for the TCLP list metals are found in the following table. If a value in column H exceeds a value in column I, then the waste exceeds the TCLP regulatory level for that analyte. Column J calculates the appropriate number of samples needed to properly characterize your waste. **For this media, the results show that all metals are less than the TCLP regulatory limit and the number of samples collected, two, was statistically appropriate.**

A	B	C	D	E	F	G	H	I	J
ANALYTE	W05401021TM (UG/L)	DATA FLAG	W05401022TM (UG/L)	DATA FLAG	AVE. (UG/L)	STAND. DEV. (UG/L)	UPPER CONF. LIMIT (UG/L)	TCLP REG. LIMIT (UG/L)	APP. NUMBER OF SAMPLES
ARSENIC	10.0	U	10.0	U	NA	NA	NA	5000.0	NA
BARIUM	911.0		941.0		926	21	972	100000.0	0.0000
CADMIUM	2.7	B	2.5	U	NA	NA	NA	1000.0	NA
CHROMIUM	2.5	U	2.5	U	NA	NA	NA	5000.0	NA
LEAD	1.9	B(U)	1.5	U	NA	NA	NA	5000.0	NA
MERCURY	1.0	U	1.0	U	NA	NA	NA	200.0	NA
SELENIUM	11.0	B(U)	4.0	B(U)	NA	NA	NA	1000.0	NA
SILVER	64.0		10.0		37.0	38.2	120.1	5000.0	0.0006

Data Flag – A "U" is entered if the analyte was analyzed for but was not detected. The associated numerical value is the sample detection limit. A "B" is entered if the value is between the laboratory MDL and the required detection limit (RQL).
Validation Flag (inside parenthesis)-A (U) is entered is the associated value was less than 5 times the highest positive amount in any laboratory blank.
NA – Not applicable due to "U" coded data.

The data results for the Appendix IX SVOCs are found in the following table.

ANALYTE	W05401021SV (UG/KG)	DATA FLAG	W05401022SV (UG/KG)	DATA FLAG	AVERAGE (UG/KG)	STANDARD DEVIATION (UG/KG)	UPPER CONFIDENCE LIMIT (UG/KG)
PYRIDINE	330	U	370	U	NA	NA	NA
N-NITROSODIUMETHYLAMINE	330	U	370	U	NA	NA	NA
2-PICOLINE	330	U	370	U	NA	NA	NA
METHYLMETHANESULFONATE	330	U	370	U	NA	NA	NA
ETHYLMETHANESULFONATE	330	U	370	U	NA	NA	NA
ANILINE	330	U	370	U	NA	NA	NA

ANALYTE	W05401021SV (UG/KG)	DATA FLAG	W05401022SV (UG/KG)	DATA FLAG	AVERAGE (UG/KG)	STANDARD DEVIATION (UG/KG)	UPPER CONFIDENCE LIMIT (UG/KG)
BIS(2-CHLOROETHYL)ETHER	330	U	370	U	NA	NA	NA
PHENOL	330	U	370	U	NA	NA	NA
2-CHLOROPHENOL	330	U	370	U	NA	NA	NA
1,3-DICHLOROBENZENE	330	U	370	U	NA	NA	NA
1,4-DICHLOROBENZENE	330	U	370	U	NA	NA	NA
1,2-DICHLOROBENZENE	330	U	370	U	NA	NA	NA
BENZYL ALCOHOL	330	U	370	U	NA	NA	NA
BIS(2-CHLOROISOPROPYL)ETHER	330	U	370	U	NA	NA	NA
2-METHYLPHENOL	330	U	370	U	NA	NA	NA
ACETOPHENONE	330	U	370	U	NA	NA	NA
HEXACHLOROETHANE	330	U	370	U	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	330	U	370	U	NA	NA	NA
3&4-METHYLPHENOL	660	U	740	U	NA	NA	NA
NITROBENZENE	330	U	370	U	NA	NA	NA
N-NITROSOPIPERIDINE	330	U	370	U	NA	NA	NA
ISOPHORONE	330	U	370	U	NA	NA	NA
2-NITROPHENOL	330	U	370	U	NA	NA	NA
2-4-DIMETHYLPHENOL	330	U	370	U	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	330	U	370	U	NA	NA	NA
2,4-DICHLOROPHENOL	330	U	370	U	NA	NA	NA
1,2,4-TRICHLOROBENZENE	330	U	370	U	NA	NA	NA
NAPHTHALENE	330	U	370	U	NA	NA	NA
BENZOIC ACID	330	U	370	U	NA	NA	NA
A,A-DIMETHYLPHENETHYLAMINE	330	U	370	U	NA	NA	NA
4-CHLOROANILINE	330	U	370	U	NA	NA	NA
2,6-DICHLOROPHENOL	330	U	370	U	NA	NA	NA
HEXACHLOROBUTADINE	330	U	370	U	NA	NA	NA
N-NITROSO-DI-N-BUTYLAMINE	330	U	370	U	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	330	U	370	U	NA	NA	NA
2-METHYLNAPHTHALENE	330	U	370	U	NA	NA	NA
1,2,4,5-TETRACHLOROBENZENE	330	U	370	U	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	330	U	370	U	NA	NA	NA
2,4,6-TRICHLOROPHENOL	330	U	370	U	NA	NA	NA
2,4,5-TRICHLOROPHENOL	330	U	370	U	NA	NA	NA
2-CHLORONAPHTHALENE	330	U	370	U	NA	NA	NA
2-NITROANILINE	330	U	370	U	NA	NA	NA
ACENAPHTHYLENE	330	U	370	U	NA	NA	NA
DIMETHYLPHTHALATE	330	U	370	U	NA	NA	NA
2,6-DINITROTOLUENE	330	U	370	U	NA	NA	NA
ACENAPHTHENE	330	U	370	U	NA	NA	NA
3-NITROANILINE	330	U	370	U	NA	NA	NA
2,4-DINITROPHENOL	330	U	370	U	NA	NA	NA
DIBENZOFURAN	330	U	370	U	NA	NA	NA
PENTACHLOROBENZENE	330	U	370	U	NA	NA	NA
2,4-DINITROTOLUENE	330	U	370	U	NA	NA	NA

ANALYTE	W05401021SV (UG/KG)	DATA FLAG	W05401022SV (UG/KG)	DATA FLAG	AVERAGE (UG/KG)	STANDARD DEVIATION (UG/KG)	UPPER CONFIDENCE LIMIT (UG/KG)
4-NITROPHENOL	330	U	370	U	NA	NA	NA
1-NAPHTHYLAMINE	330	U	370	U	NA	NA	NA
2-NAPHTHYLAMINE	330	U	370	U	NA	NA	NA
2,3,4,6-TETRACHLOROPHENOL	330	U	370	U	NA	NA	NA
FLOURENE	330	U	370	U	NA	NA	NA
4-CHLOROPHENYL-PHENYLETHER	330	U	370	U	NA	NA	NA
DIETHYLPHTHALATE	330	U	370	U	NA	NA	NA
4-NITROANILINE	330	U	370	U	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	330	U	370	U	NA	NA	NA
4-BROMOPHENYL-PHENYLETHER	330	U	370	U	NA	NA	NA
1,3,5-TRINITROBENZENE	330	U	370	U	NA	NA	NA
HEXACHLOROBENZENE	330	U	370	U	NA	NA	NA
4-AMINOBIPHENYL	330	U	370	U	NA	NA	NA
PENTACHLOROPHENOL	330	U	370	U	NA	NA	NA
PHENANTHRENE	330	U	370	U	NA	NA	NA
ANTHRANCE	330	U	370	U	NA	NA	NA
CARBAZOLE	330	U	370	U	NA	NA	NA
DI-N-BUTYLPHTHALATE	330	U	370	U	NA	NA	NA
FLUORANTHENE	330	U	370	U	NA	NA	NA
PYRENE	330	U	370	U	NA	NA	NA
P-(DIMETHYLAMINO)AZOBENZENE	330	U	370	U	NA	NA	NA
BUTYLBENZYLPHTHALATE	330	U	370	U	NA	NA	NA
3,3'-DICHLOROBENZIDINE	330	U	370	U	NA	NA	NA
BENZO(A)ANTHRACENE	330	U	370	U	NA	NA	NA
CHRYSENE	330	U	370	U	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	330	U	370	U	45	3	51
DI-N-OCTYLPHTHALATE	330	U	370	U(UJ)	NA	NA	NA
BENZO(B)FLUORANTHENE	330	U	370	U(UJ)	NA	NA	NA
BENZO(K)FLUORANTHENE	330	U	370	U(UJ)	NA	NA	NA
7,12-DIMETHYLBENZ(A)ANTHRACE	330	U	370	U(UJ)	NA	NA	NA
BENZO(A)PYRENE	330	U	370	U(UJ)	NA	NA	NA
3-METHYLCHOLANTHRENE	330	U	370	U(UJ)	NA	NA	NA
INDENO(1,2,30CD)PYRENE	330	U	370	U(UJ)	NA	NA	NA
DIBENZ(A,H)ANTHRANCENE	330	U	370	U(UJ)	NA	NA	NA
BENZO(G,H,I)PERYLENE	330	U	370	U(UJ)	NA	NA	NA
N-NITROSOMETHYLETHYLAMINE	330	U	370	U	NA	NA	NA
N-NITROSODIETHYLAMINE	330	U	370	U	NA	NA	NA
PENTACHLOROETHANE	330	U	370	U	NA	NA	NA
N-NITROSOPYRROLIDINE	330	U	370	U	NA	NA	NA
N-NIROSOMORPHOLINE	330	U	370	U	NA	NA	NA
O&P-TOLUIDINE	660	U	670	U	NA	NA	NA
O,O,0-TRIETHYPHOSHORORTHIOATE	330	U	740	U	NA	NA	NA
HEXACHLOROPROPENE	330	U	370	U	NA	NA	NA
1,4&1-2-PHENYLENEDIAMINE	670	U	740	U	NA	NA	NA
ISOSAFROLE	330	U	370	U	NA	NA	NA

ANALYTE	W054010021SV (UG/KG)	DATA FLAG	W054010022SV (UG/KG)	DATA FLAG	AVERAGE (UG/KG)	STANDARD DEVIATION (UG/KG)	UPPER CONFIDENCE LIMIT (UG/KG)
SAFROLE	330	U	370	U	NA	NA	NA
1,4-NAPHTHOQUINONE	330	U	370	U	NA	NA	NA
1,3-DINITROBENZENE	330	U	370	U	NA	NA	NA
5-NITRO-O-TOLUIDINE	330	U	370	U	NA	NA	NA
THIONAZIN	330	U	370	U	NA	NA	NA
N-NITROSDIPHENYLAMINE/DIPHENYLAMINE	660	U	670	U	NA	NA	NA
PHENACETIN	330	U	370	U	NA	NA	NA
PENTACHLORONITROBENZENE	330	U(R)	370	U(R)	NA	NA	NA
PRONAMIDE	330	U	370	U	NA	NA	NA
DINOSEB	330	U	370	U	NA	NA	NA
4-NITROQUINOLINE-1-OXIDE	330	U	370	U	NA	NA	NA
METHAPYRILINE	330	U	370	U	NA	NA	NA
ARAMITE	330	U	370	U	NA	NA	NA
3,3'-DIMETHYLBENZIDINE	330	U	370	U	NA	NA	NA
FAMPHUR	330	U(R)	370	U(R)	NA	NA	NA
2-ACETYLAMINOFLUORENE	330	U	370	U	NA	NA	NA

Data Flags-outside parenthesis- A U is entered if the analyte was analyzed for but not detected. The associated numerical value is the analyte detection limit.
A J is entered if the associated value is below the quantitation limit, but above the instrument detection limit.
Validation flag (inside parenthesis)- A (R) is entered if the data was rejected due to calibration noncompliances.. A (J) is entered if the value is an estimate.
A (UJ) is entered is the positive result is an estimate due to deficient internal standard recoveries.
NA – Not applicable due to "U" coded data.

The data results for the Appendix IX VOCs are found in the following table.

TARGET ANALYTE	W054010021VC (UG/KG)	DATA FLAG	W054010022VC (UG/KG)	DATA FLAG	AVERAGE (UG/KG)	STANDARD DEVIATION (UG/KG)	UPPER CONFIDENCE LIMIT (UG/KG)
CHLOROMETHANE	1	U	1	U	NA	NA	NA
BROMOMETHANE	1	U(UJ)	1	U(UJ)	NA	NA	NA
VINYL CHLORIDE	1	U	1	U	NA	NA	NA
CHLOROETHANE	1	U	1	U	NA	NA	NA
METHYLENE CHLORIDE	1	U	1.2		1.1	0.1	1.4
ACETONE	5	U	5	U	NA	NA	NA
CARBON DISULFIDE	9	U(UJ)	11	U(UJ)	NA	NA	NA
1,1-DICHLOROETHENE	1	U	1	U	NA	NA	NA
1,1-DICHLOROETHANE	1	U	1	U	NA	NA	NA
1,2-DICHLOROETHENE (TOTAL)	1	U	1	U	NA	NA	NA
CHLOROFORM	1	U	1	U	NA	NA	NA
1,2-DICHLOROETHANE	1	U	1	U	NA	NA	NA
2-BUTANONE	5	U	5	U	NA	NA	NA
1,1,1-TRICHLOROETHANE	1	U	1	U	NA	NA	NA
CARBON TETRACHLORIDE	1	U	1	U	NA	NA	NA
VINYL ACETATE	1	U	1	U	NA	NA	NA

TARGET ANALYTE	W05401021VC (UG/KG)	DATA FLAG	W05401022VC (UG/KG)	DATA FLAG	AVERAGE (UG/KG)	STANDARD DEVIATION (UG/KG)	UPPER CONFIDENCE LIMIT (UG/KG)
BROMODICHLOROMETHANE	1	U	1	U	NA	NA	NA
1,2-DICHLOROPROPANE	1	U	1	U	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	1	U	1	U	NA	NA	NA
TRICHLOROETHENE	1	U	1	U	NA	NA	NA
DIBROMOCHLOROMETHANR	1	U	1	U	NA	NA	NA
1,1,2-TRICHLOROETHANE	1	U	1	U	NA	NA	NA
BENZENE	1	U	1	U	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	1	U	1	U	NA	NA	NA
BROMOFORM	1	U	1	U	NA	NA	NA
4-METHYL-2-PENTANONE	5	U	5	U	NA	NA	NA
2-HEXANONE	5	U	5	U	NA	NA	NA
TETRACHLOROETHENE	1	U	1	U	NA	NA	NA
TOLUENE	1.5		2.5		2.0	0.7	3.5
1,1,2,2-TETRACHLOROETHANE	1	U	1	U	NA	NA	NA
CHLOROBENZENE	1	U	1	U	NA	NA	NA
ETHYLBENZENE	1	U	1	U	NA	NA	NA
STYRENE	1	U	1	U	NA	NA	NA
XYLENE(TOTAL)	1	U	1	U	NA	NA	NA
DICHLORODIFLUOROMETHANE	1	U	1	U	NA	NA	NA
TRICHLOROTLUOROMETHANE	1	U	1	U	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	1	U	1	U	NA	NA	NA
IDOMETHANE	5	U	5	U	NA	NA	NA
ALLYL CHLORIDE	1	U	1	U	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1	U	1	U	NA	NA	NA
PROPIONITRILE	1	U	1	U	NA	NA	NA
ACETONITRILE	5	U	5	U	NA	NA	NA
ACROLEIN	2	U	2	U	NA	NA	NA
2-CHLORO-1,3-BUTADIENE	1	U(R)	1	U(R)	NA	NA	NA
ACRYLONITRILE	1	U	1	U	NA	NA	NA
1,4-DIOXANE	50	U(R)	50	U(R)	NA	NA	NA
METHACRYLONITRILE	1	U	1	U	NA	NA	NA
METHYL METHACRYLATE	1	U	1	U	NA	NA	NA
DIBROMOMETHANE	1	U	1	U	NA	NA	NA
ISOBUTYL ALCOHOL	5	U(R)	5	U(R)	NA	NA	NA
1,2-DIBROMOETHANE	1	U	1	U	NA	NA	NA
1,1,1,2-TETRACHLOROETHANE	1	U	1	U	NA	NA	NA
M&P-XYLENE	1	U	1.2		NA	NA	NA
O-XYLENE	1	U	1.0	U	NA	NA	NA
1,2,3-TRICHLOROPROPANE	1	U	1	U	NA	NA	NA
TRANS-1,4-DICHLORO-2-BUTENE	1	U	1	U	NA	NA	NA
1,2-BIBROMO-3-CHLOROPROPANE	1	U	1	U	NA	NA	NA

Data Flags-outside parenthesis- A U is entered if the analyte was analyzed for but not detected. The associated numerical value is the analyte detection limit. Validation flag (inside parenthesis)- A (R) is entered if the data was rejected due to calibration noncompliances.. A (J) is entered if the value is an estimate. A (UJ) is entered is the positive result is was qualified as nondetected due to deficient calibration recoveries A (U) is entered if the positive result was nondetected due to method blank contamination.
NA – Not applicable due to "U" coded data.

Blue Flag

The data results for the TCLP list of metals are found in the following table. If a value in column H exceeds a value in column I, then the waste exceeds the TCLP regulatory level for that analyte. Column J calculates the appropriate number of samples needed to properly characterize your waste. **For this media, the results show *that all metals are less than the TCLP regulatory limit.***

A	B	C	D	E	F	G	H	I	J
ANALYTE	W05401031TM (UG/L)	DATA FLAG	W05401032TM (UG/L)	DATA FLAG	AVE. (UG/L)	STAND. DEV. (UG/L)	UPPER CONF. LIMIT (UG/L)	TCLP REG. LIMIT (UG/L)	APP. NUMBER OF SAMPLES
ARSENIC	10.0	U	10.0	U	NA	NA	NA	5000.0	NA
BARIUM	949.0		872.0		911	54	1029	100000.0	0.0000
CADMIUM	2.5	U	2.5	U	NA	NA	NA	1000.0	NA
CHROMIUM	4.1	B(U)	3.3	B(U)	4	NA	NA	5000.0	NA
LEAD	14.3	(U)	1.6	B(U)	NA	NA	NA	5000.0	NA
MERCURY	1.0	U	1.0	U	NA	NA	NA	200.0	NA
SELENIUM	4.8	B(U)	6.9	B(U)	NA	NA	NA	1000.0	NA
SILVER	7.7	B	5.6	B	6.7	1.5	9.9	5000.0	0.0000

Data Flag - A "U" is entered if the analyte was analyzed for but was not detected. The associated numerical value is the sample detection limit. A "B" is entered if the value is between the laboratory MDL and the required detection limit (RQL).
Validation Flag (inside parenthesis)-A (U) is entered is the associated value was less than 5 times the highest positive amount in any laboratory blank.
NA – Not applicable due to "U" coded data.

The data results for the Appendix IX SVOCs are found in the following table.

ANALYTE	W05401031SV (UG/KG)	DATA FLAG	W05401032SV (UG/KG)	DATA FLAG	AVERAGE (UG/KG)	STANDARD DEVIATION (UG/KG)	UPPER CONFIDENCE LIMIT (UG/KG)
PYRIDINE	350	U	330	U	NA	NA	NA
N-NITROSODIUMETHYLAMINE	350	U	330	U	NA	NA	NA
2-PICOLINE	350	U	330	U	NA	NA	NA
METHYLMETHANESULFONATE	350	U	330	U	NA	NA	NA
ETHYLMETHANESULFONATE	350	U	330	U	NA	NA	NA
ANILINE	350	U	330	U	NA	NA	NA
BIS(2-CHLOROETHYL)ETHER	350	U	330	U	NA	NA	NA
PHENOL	350	U	330	U	NA	NA	NA
2-CHLOROPHENOL	350	U	330	U	NA	NA	NA
1,3-DICHLOROBENZENE	350	U	330	U	NA	NA	NA
1,4-DICHLOROBENZENE	350	U	330	U	NA	NA	NA

ANALYTE	W05401031SV (UG/KG)	DATA FLAG	W05401032SV (UG/KG)	DATA FLAG	AVERAGE (UG/KG)	STANDARD DEVIATION (UG/KG)	UPPER CONFIDENCE LIMIT (UG/KG)
1,2-DICHLOROBENZENE	350	U	330	U	NA	NA	NA
BENZYL ALCOHOL	350	U	330	U	NA	NA	NA
BIS(2-CHLOROISOPROPYL)ETHER	350	U	330	U	NA	NA	NA
2-METHYLPHENOL	350	U	330	U	NA	NA	NA
ACETOPHENONE	350	U	330	U	NA	NA	NA
HEXACHLOROETHANE	350	U	330	U	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	350	U	330	U	NA	NA	NA
3&4-METHYLPHENOL	700	U	670	U	NA	NA	NA
NITROBENZENE	350	U	330	U	NA	NA	NA
N-NITROSOPIPERIDINE	350	U	330	U	NA	NA	NA
ISOPHORONE	350	U	330	U	NA	NA	NA
2-NITROPHENOL	350	U	330	U	NA	NA	NA
2-4-DIMETHYLPHENOL	350	U	330	U	NA	NA	NA
BIS(2-CHLOROETHOXY)METHANE	350	U	330	U	NA	NA	NA
2,4-DICHLOROPHENOL	350	U	330	U	NA	NA	NA
1,2,4-TRICHLOROBENZENE	350	U	330	U	NA	NA	NA
NAPHTHALENE	350	U	330	U	NA	NA	NA
BENZOIC ACID	350	U	330	U	NA	NA	NA
A,A-DIMETHYLPHENETHYLAMINE	350	U	330	U	NA	NA	NA
4-CHLOROANILINE	350	U	330	U	NA	NA	NA
2,6-DICHLOROPHENOL	350	U	330	U	NA	NA	NA
HEXACHLOROBUTADINE	350	U	330	U	NA	NA	NA
N-NITROSO-DI-N-BUTYLAMINE	350	U	330	U	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	350	U	330	U	NA	NA	NA
2-METHYLNAPHTHALENE	350	U	330	U	NA	NA	NA
1,2,4,5-TETRACHLOROBENZENE	350	U	330	U	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	350	U	330	U	NA	NA	NA
2,4,6-TRICHLOROPHENOL	350	U	330	U	NA	NA	NA
2,4,5-TRICHLOROPHENOL	350	U	330	U	NA	NA	NA
2-CHLORONAPHTHALENE	350	U	330	U	NA	NA	NA
2-NITROANILINE	350	U	330	U	NA	NA	NA
ACENAPHTHYLENE	350	U	330	U	NA	NA	NA
DIMETHYLPHTHALATE	350	U	330	U	NA	NA	NA
2,6-DINITROTOLUENE	350	U	330	U	NA	NA	NA
ACENAPHTHENE	350	U	330	U	NA	NA	NA
3-NITROANILINE	350	U	330	U	NA	NA	NA
2,4-DINITROPHENOL	350	U	330	U	NA	NA	NA
DIBENZOFURAN	350	U	330	U	NA	NA	NA
PENTACHLOROBENZENE	350	U	330	U	NA	NA	NA
2,4-DINITROTOLUENE	350	U	330	U	NA	NA	NA
4-NITROPHENOL	350	U	330	U	NA	NA	NA
1-NAPHTHYLAMINE	350	U	330	U	NA	NA	NA
2-NAPHTHYLAMINE	350	U	330	U	NA	NA	NA
2,3,4,6-TETRACHLOROPHENOL	350	U	330		NA	NA	NA
FLOURENE	350	U	330	U	NA	NA	NA

ANALYTE	W05401031SV (UG/KG)	DATA FLAG	W05401032SV (UG/KG)	DATA FLAG	AVERAGE (UG/KG)	STANDARD DEVIATION (UG/KG)	UPPER CONFIDENCE LIMIT (UG/KG)
4-CHLOROPHENYL-PHENYLETHER	350	U	330	U	NA	NA	NA
DIETHYLPHTHALATE	350	U	330	U	NA	NA	NA
4-NITROANILINE	350	U	330	U	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	350	U	330	U	NA	NA	NA
4-BROMOPHENYL-PHENYLETHER	350	U	330	U	NA	NA	NA
1,3,5-TRINITROBENZENE	350	U	330	U	NA	NA	NA
HEXACHLOROBENZENE	350	U	330	U	NA	NA	NA
4-AMINOBIPHENYL	350	U	330	U	NA	NA	NA
PENTACHLOROPHENOL	350	U	330	U	NA	NA	NA
PHENANTHRENE	350	U	330	U	NA	NA	NA
ANTHRANCE	350	U	330	U	NA	NA	NA
CARBAZOLE	350	U	330	U	NA	NA	NA
DI-N-BUTYLPHTHALATE	350	U	330	U	NA	NA	NA
FLUORANTHENE	350	U	330	U	NA	NA	NA
PYRENE	350	U	330	U	NA	NA	NA
P-(DIMETHYLAMINO)AZOBENZENE	350	U	330	U	NA	NA	NA
BUTYLBENZYLPHTHALATE	350	U	330	U	NA	NA	NA
3,3'-DICHLOROBENZIDINE	350	U	330	U	NA	NA	NA
BENZO(A)ANTHRACENE	350	U	330	U	NA	NA	NA
CHRYSENE	350	U	330	U	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	73	JD(J)	92	JD(J)	83	13	112
DI-N-OCTYLPHTHALATE	37	J(J)	330	U(UJ)	NA	NA	NA
BENZO(B)FLUORANTHENE	350	U(UJ)	330	U(UJ)	NA	NA	NA
BENZO(K)FLUORANTHENE	350	U(UJ)	330	U(UJ)	NA	NA	NA
7,12-DIMETHYLBENZ(A)ANTHRACE	350	U(UJ)	330	U(UJ)	NA	NA	NA
BENZO(A)PYRENE	350	U(UJ)	330	U(UJ)	NA	NA	NA
3-METHYLCHOLANTHRENE	350	U(UJ)	330	U(UJ)	NA	NA	NA
INDENO(1,2,30CD)PYRENE	350	U(UJ)	330	U(UJ)	NA	NA	NA
DIBENZ(A,H)ANTHRANCENE	350	U(UJ)	330	U(UJ)	NA	NA	NA
BENZO(G,H,I)PERYLENE	350	U(UJ)	330	U(UJ)	NA	NA	NA
N-NITROSOMETHYLETHYLAMINE	350	U	330	U	NA	NA	NA
N-NITROSODIETHYLAMINE	350	U	330	U	NA	NA	NA
PENTACHLOROETHANE	350	U	330	U	NA	NA	NA
N-NITROSOPYRROLIDINE	350	U	330	U	NA	NA	NA
N-NIROSOMORPHOLINE	350	U	330	U	NA	NA	NA
O&P-TOLUIDINE	660	U	670	U	NA	NA	NA
O,O,0-TRIETHYPHOSHORORTHIOATE	350	U	740	U	NA	NA	NA
HEXACHLOROPROPENE	350	U	330	U	NA	NA	NA
1,4&1-2-PHENYLENEDIAMINE	700	U	740	U	NA	NA	NA
ISOSAFROLE	350	U	330	U	NA	NA	NA
SAFROLE	350	U	330	U	NA	NA	NA
1,4-NAPHTHOQUINONE	350	U	330	U	NA	NA	NA
1,3-DINITROBENZENE	350	U	330	U	NA	NA	NA
5-NITRO-O-TOLUIDINE	350	U	330	U	NA	NA	NA

ANALYTE	W05401031SV (UG/KG)	DATA FLAG	W05401032SV (UG/KG)	DATA FLAG	AVERAGE (UG/KG)	STANDARD DEVIATION (UG/KG)	UPPER CONFIDENCE LIMIT (UG/KG)
THIONAZIN	350	U	330	U	NA	NA	NA
N-NITROSDIPHENYLAMINE/DIPHENYLAMINE	660	U	670	U	NA	NA	NA
PHENACETIN	350	U	330	U	NA	NA	NA
PENTACHLORONITROBENZENE	350	U(R)	330	U(R)	NA	NA	NA
PRONAMIDE	350	U	330	U	NA	NA	NA
DINOSEB	350	U	330	U	NA	NA	NA
4-NITROQUINOLINE-1-OXIDE	350	U	330	U	NA	NA	NA
METHAPYRILINE	350	U	330	U	NA	NA	NA
ARAMITE	350	U	330	U	NA	NA	NA
3,3'-DIMETHYLBENZIDINE	350	U	330	U	NA	NA	NA
FAMPHUR	350	U(R)	330	U(R)	NA	NA	NA
2-ACETYLAMINOFLUORENE	350	U	330	U	NA	NA	NA

Data Flags-outside parenthesis- A U is entered if the analyte was analyzed for but not detected. The associated numerical value is the analyte detection limit. A J is entered if the associated value is below the quantitation limit, but above the instrument detection limit. A D is entered if the value is from a dilution analysis

Validation flag (inside parenthesis)- A (R) is entered if the data was rejected due to calibration noncompliances. The accuracy of the data is so questionable that it is recommended the data not be used. For any given data point, a "R" validation flag overrides all other applicable flags. A (J) is entered if the value is an estimate. A (UJ) is entered is the positive result is an estimate due to deficient internal standard recoveries.

NA – Not applicable due to "U" coded data.

The data results for the Appendix IX VOCs are found in the following table.

TARGET ANALYTE	W05401031VC (UG/KG)	DATA FLAG	W05401032VC (UG/KG)	DATA FLAG	AVERAGE (UG/KG)	STANDARD DEVIATION (UG/KG)	UPPER CONFIDENCE LIMIT (UG/KG)
CHLOROMETHANE	1	U	1	U	NA	NA	NA
BROMOMETHANE	1	U(UJ)	1	U(UJ)	NA	NA	NA
VINYL CHLORIDE	1	U	1	U	NA	NA	NA
CHLOROETHANE	1	U	1	U	NA	NA	NA
METHYLENE CHLORIDE	1.2		1.6		1.4	0.3	2.0
ACETONE	5	U	5	U	NA	NA	NA
CARBON DISULFIDE	14	(J)	11	U(UJ)	NA	NA	NA
1,1-DICHLOROETHENE	1	U	1	U	NA	NA	NA
1,1-DICHLOROETHANE	1	U	1	U	NA	NA	NA
1,2-DICHLOROETHENE (TOTAL)	1	U	1	U	NA	NA	NA
CHLOROFORM	1	U	1	U	NA	NA	NA
1,2-DICHLOROETHANE	1	U	1	U	NA	NA	NA
2-BUTANONE	5	U	5	U	NA	NA	NA
1,1,1-TRICHLOROETHANE	1	U	1	U	NA	NA	NA
CARBON TETRACHLORIDE	1	U	1	U	NA	NA	NA
VINYL ACETATE	1	U	1	U	NA	NA	NA
BROMODICHLOROMETHANE	1	U	1	U	NA	NA	NA
1,2-DICHLOROPROPANE	1	U	1	U	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	1	U	1	U	NA	NA	NA
TRICHLOROETHENE	1	U	1	U	NA	NA	NA
DIBROMOCHLOROMETHANR	1	U	1	U	NA	NA	NA

TARGET ANALYTE	W05401031VC (UG/KG)	DATA FLAG	W05401032VC (UG/KG)	DATA FLAG	AVERAGE (UG/KG)	STANDARD DEVIATION (UG/KG)	UPPER CONFIDENCE LIMIT (UG/KG)
1,1,2-TRICHLOROETHANE	1	U	1	U	NA	NA	NA
BENZENE	1.3		1	U	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	1	U	1	U	NA	NA	NA
BROMOFORM	1	U	1	U	NA	NA	NA
4-METHYL-2-PENTANONE	5	U	5	U	NA	NA	NA
2-HEXANONE	5	U	5	U	NA	NA	NA
TETRACHLOROETHENE	1	U	1	U	NA	NA	NA
TOLUENE	5.0		2.5		3.8	1.8	7.6
1,1,2,2-TETRACHLOROETHANE	1	U	1	U	NA	NA	NA
CHLOROBENZENE	1	U	1	U	NA	NA	NA
ETHYLBENZENE	1	U	1	U	NA	NA	NA
STYRENE	1	U	1	U	NA	NA	NA
XYLENE(TOTAL)	1.3		1	U	1.2	0.1	1.5
DICHLORODIFLUOROMETHANE	1	U	1	U	NA	NA	NA
TRICHLOROFLUOROMETHANE	1	U	1	U	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	1	U	1	U	NA	NA	NA
IDOMETHANE	5	U	5	U	NA	NA	NA
ALLYL CHLORIDE	1	U	1	U	NA	NA	NA
CIS-1,2-DICHLOROETHENE	1	U	1	U	NA	NA	NA
PROPIONITRILE	1	U	1	U	NA	NA	NA
ACETONITRILE	5	U	5	U	NA	NA	NA
ACROLEIN	2	U	2	U	NA	NA	NA
2-CHLORO-1,3-BUTADIENE	1	U(R)	1	U(R)	NA	NA	NA
ACRYLONITRILE	1	U	1	U	NA	NA	NA
1,4-DIOXANE	50	U(R)	50	U(R)	50.0	0.0	50.0
METHACRYLONITRILE	1	U	1	U	NA	NA	NA
METHYL METHACRYLATE	1	U	1	U	NA	NA	NA
DIBROMOMETHANE	1	U	1	U	NA	NA	NA
ISOBUTYL ALCOHOL	5	U(R)	5	U(R)	NA	NA	NA
1,2-DIBROMOETHANE	1	U	1	U	NA	NA	NA
1,1,1,2-TETRACHLOROETHANE	1	U	1	U	NA	NA	NA
M&P-XYLENE	2.9		1	U	NA	NA	NA
O-XYLENE	1.3		1	U	NA	NA	NA
1,2,3-TRICHLOROPROPANE	1	U	1	U	NA	NA	NA
TRANS-1,4-DICHLORO-2-BUTENE	1	U	1	U	NA	NA	NA
1,2-BIBROMO-3-CHLOROPROPANE	1	U	1	U	NA	NA	NA

Data Flags-outside parenthesis- A U is entered if the analyte was analyzed for but not detected. The associated numerical value is the analyte detection limit. Validation flag (inside parenthesis)- A (R) is entered if the data was rejected due to calibration noncompliances. A (J) is entered if the value is an estimate. A (UJ) is entered is the positive result is was qualified as nondetected due to deficient calibration recoveries A (U) is entered if the positive result was nondetected due to method blank contamination.
NA - Not applicable due to "U" coded data.

If you have any questions or have other sampling and analysis needs, please feel free to contact me at 6-4189.

LPD/dlj

Attachments

cc: (w/o Attach)
J. C. Orme, MS 4142

(w/Attach)
L.P. Davis File (LPD-19-01)

Uniform File Code: 6402
Disposition Authority: ENV6-B
Retention Schedule: Cut off 5 years after disposal. Transfer to NARA 25 years after cut off.

NOTE: Original disposition authority, retention schedule, and Uniform Filing Code applied by the sender may not be appropriate for all recipients. Make adjustments as needed.